VICTORIAN BUILDING AUTHORITY

PROACTIVE INSPECTIONS PROGRAM

Activity Report

FINANCIAL YEAR 2021/22

VICTORIA State Government

ABORIGINAL ACKNOWLEDGEMENT

The VBA respectfully acknowledges the Traditional Owners and custodians of the land and water upon which we rely.

We pay our respects to their Elders past and present. We recognise and value the ongoing contribution of Aboriginal people and communities to Victorian life.

We embrace the spirit of reconciliation, working towards equality of outcomes and an equal voice.

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ABOUT

The VBA's Proactive Inspections Program (PIP) is an early-intervention regulatory initiative which aims to identify non-compliant building and plumbing work under construction and ensures the work is rectified. Our team includes experienced building inspectors, building surveyors and licensed plumbers, who typically inspect over 1,000 domestic and commercial sites each month. Inspections focus on either building or plumbing work and sites are chosen using a variety of methods. These include:

- **Random -** identification of building permits (lodged with the VBA) based on pre-defined risk-factors, (e.g. buildings intended for human occupation, buildings that are more than two storeys or costs of works etc.)

- **Intelligence based -** typically involves targeted inspections of practitioners or sites of interest (based on a variety of information, including risk data) and/or a class of builder/building surveyor.

- **Ad-hoc -** inspectors use flexibility to inspect sites that come to their attention while attending other pre-determined sites.

When our inspectors identify compliance risks (that is, potentially non-compliant building and plumbing work), they write to the practitioner, notifying them of the issues that need to be addressed. Once notified, the practitioner responsible (builder, plumber or building surveyor) must respond to the VBA within three days for serious issues and within 14 days for moderate or lesser risk. Critical life-safety issues must be addressed immediately and, in these cases, the VBA will telephone the practitioner and relevant building surveyor, as well as notifying co-regulatory agencies such as WorkSafe.

- In some circumstances, the VBA will issue a *Direction to Fix* to resolve the most critical issues. For example, where non-compliant wall cladding is identified, the VBA will issue a *Direction to Fix*, requiring the cladding's removal before an occupancy permit is granted.

- The VBA uses a risk-rating scale (Appendix 1) to determine the level of scrutiny applied to a potential issue. The scale considers the potential adverse effects on the future safety of building occupants and people nearby and on the amenity of the building itself.

1.1. MINISTER'S STATEMENT OF EXPECTATIONS

In line with the Minister's Statement of Expectations, our goal is to inspect 10 per cent of all building permits issued in Victoria each year. When selecting inspection sites, we analyse building permit data and consider a range of risk factors. We sometimes target certain types of construction to manage risk and ensure intervention at the earliest possible stage.

1.2. BENEFITS

PIP improves safety and compliance outcomes for building and plumbing work in Victoria through early identification and rectification and, in some cases, by taking other enforcement action. By inspecting work under construction, the VBA can address significant failures earlier, resulting in better outcomes for all involved. At the same time, rectification is often easier and less costly (and covered by practitioners, not the owner) and avoids impacts on the safety, health and amenity of future occupants if the compliance risk had remained undetected or unresolved.

Information and intelligence gathered through PIP enables the VBA to provide advice on building and plumbing standards and education and training in the industry.

1.3. HOW WE CONDUCT PROACTIVE INSPECTIONS

Building and plumbing inspectors are provided with comprehensive electronic inspection checklists. The checklists have more than 500 elements grouped into three parts that address:

- building and plumbing work broken down into different building stages under the National Construction Code – Volumes 1 and 2 (Building Code of Australia).

- mandatory requirements under the Building Act 1993, Building Regulations 2018 and Plumbing Regulations 2018.

- the display of permit information.

- occupational health and safety (OHS) elements such as working at heights, temporary fencing, adequacy of propping and bracing and working in trenches. If any OHS items present an unacceptable risk, the relevant co-regulators (Environment Protection Authority, WorkSafe or Energy Safe Victoria) are contacted immediately by the building or plumbing inspector.

A comprehensive outline of the electronic inspection checklists is detailed in Appendix 2.

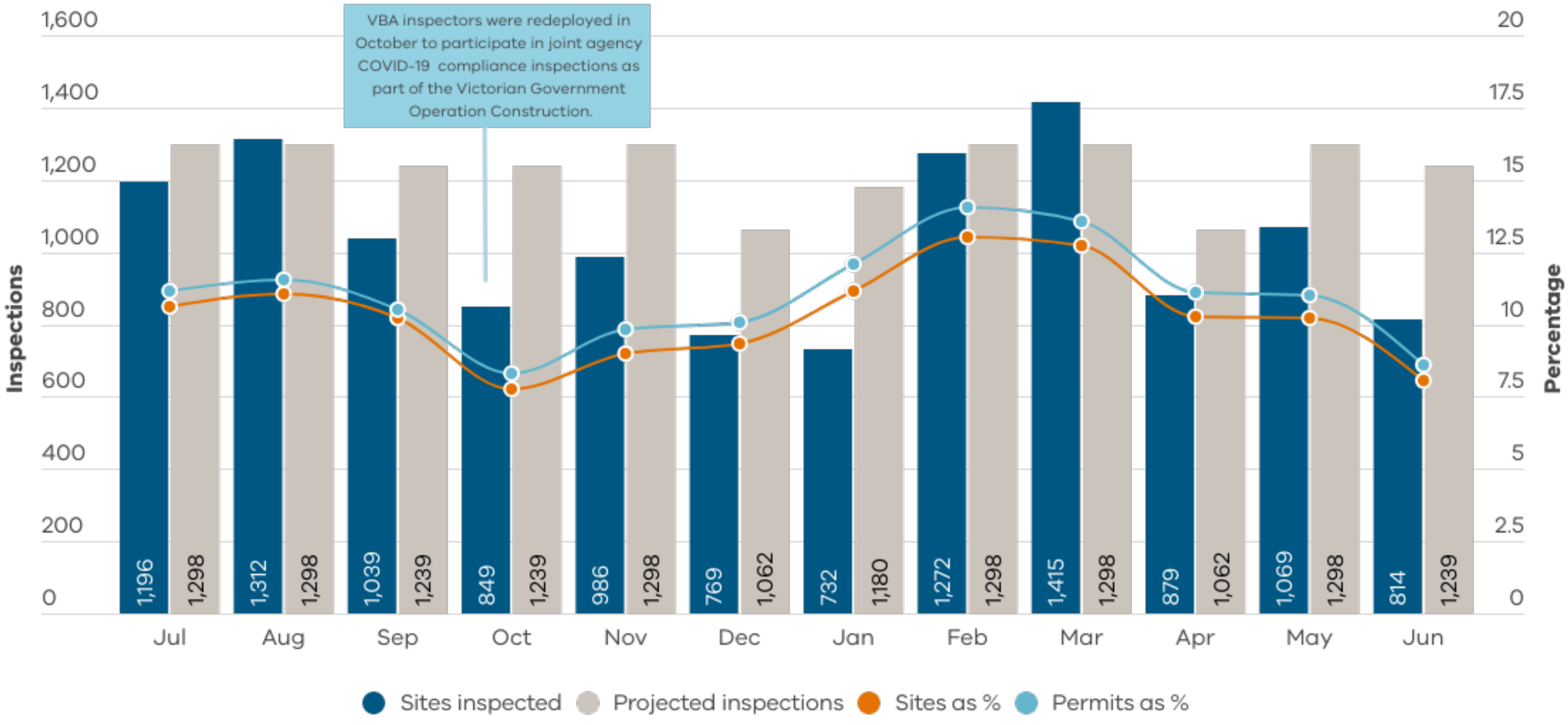
FY 2021/22 PERFORMANCE

2.1. FINANCIAL YEAR 2021/22 PERFORMANCE

The graph below illustrates the number of sites inspected each month and demonstrates how the VBA is tracking against the Minister's Statement of Expectations to inspect 10 percent of new building permits every year.

INSPECTIONS - JULY 2021 TO JUNE 2022

Projected inspections are based on a full financial year forecast of building permit activity across the State as well as historic monthly building permit activity trends. Actual activity is reported from building permit levy data and may vary from projected totals. Discrepancies between projected and completed inspections may occur depending on unforeseen industry activity and resource allocation (e.g. COVID-19 restrictions).



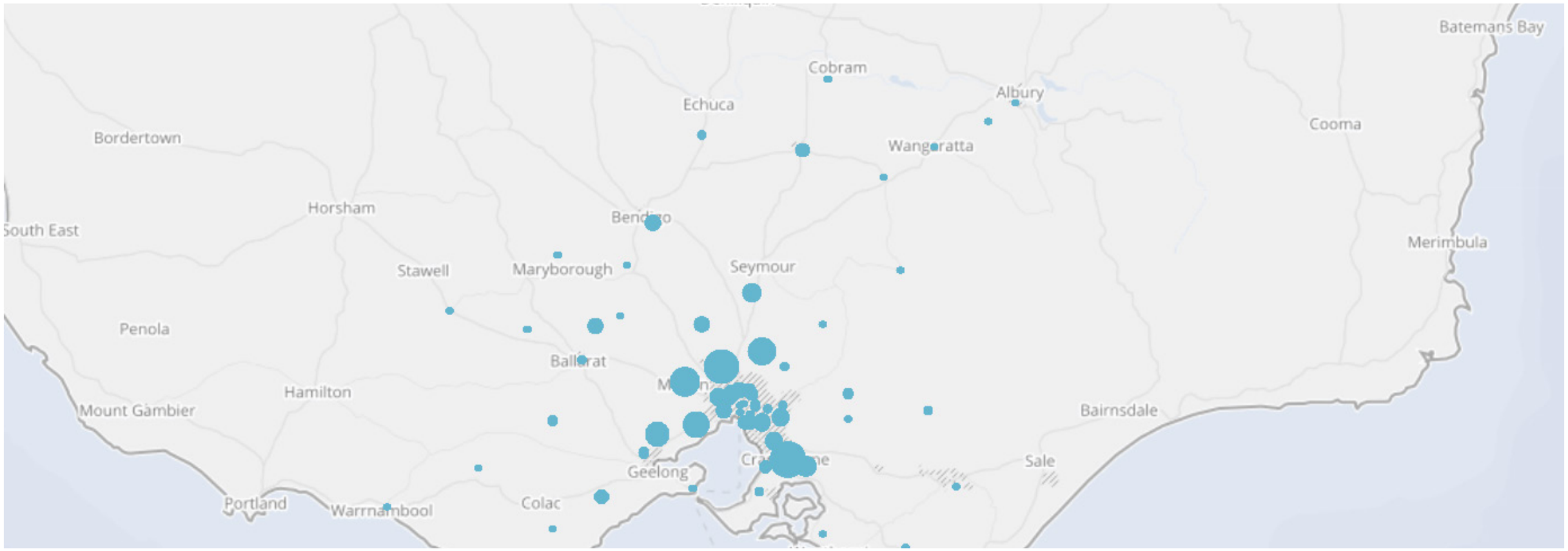
TOTAL INSPECTIONS - FINANCIAL YEAR 2021/22

4,734
Plumbing Inspections

7,598
Building Inspections

A total of 12,332 inspections (comprising 7,598 building and 4,734 plumbing inspections) were conducted across 63 municipalities in Victoria, involving 3,644 builders and 326 building surveyors.

INSPECTION MAP - JULY 2021 TO JUNE 2022

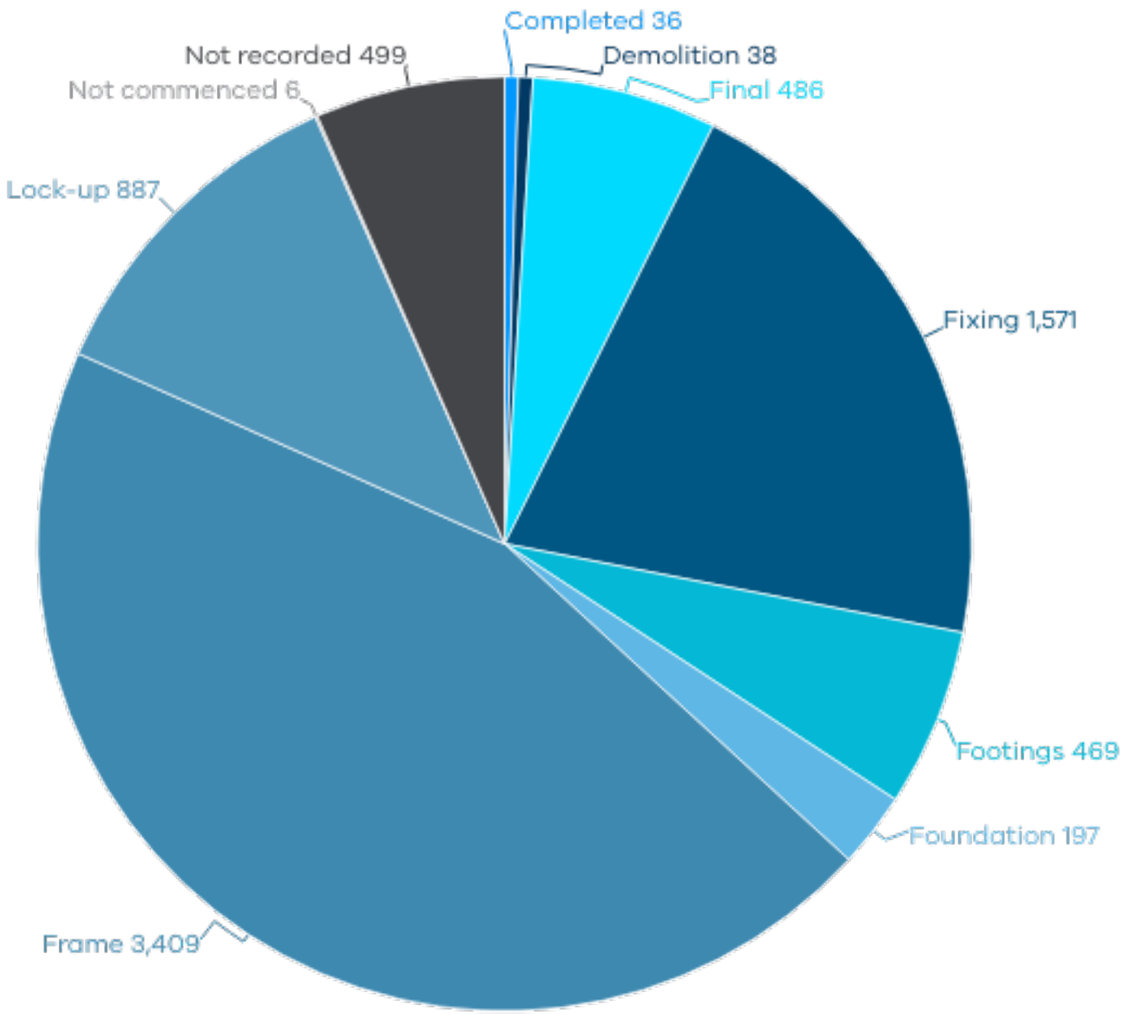


The dots represent the municipalities in which inspections occurred, the size of dots correlates to the number of inspections.
Visit the link to view the interactive map https://www.vba.vic.gov.au/building/complaints-compliance-enforcement/proactive-inspections-program/quarterly-reports

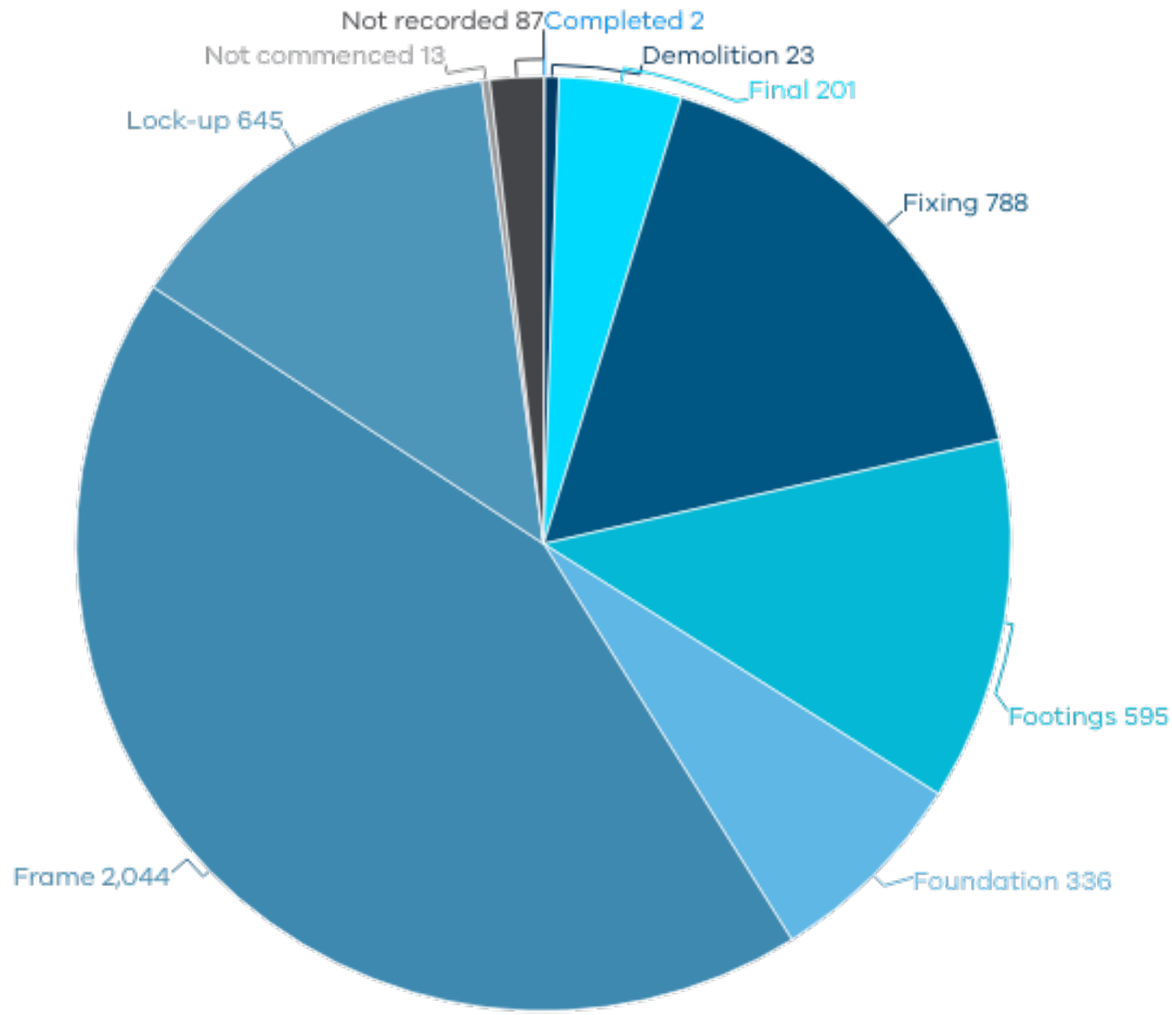
NUMBER OF INSPECTIONS AT CONSTRUCTION STAGE FY 2021/22

The graphs below illustrate the number of inspections per construction stage throughout the financial year.

BUILDING INSPECTIONS



PLUMBING INSPECTIONS



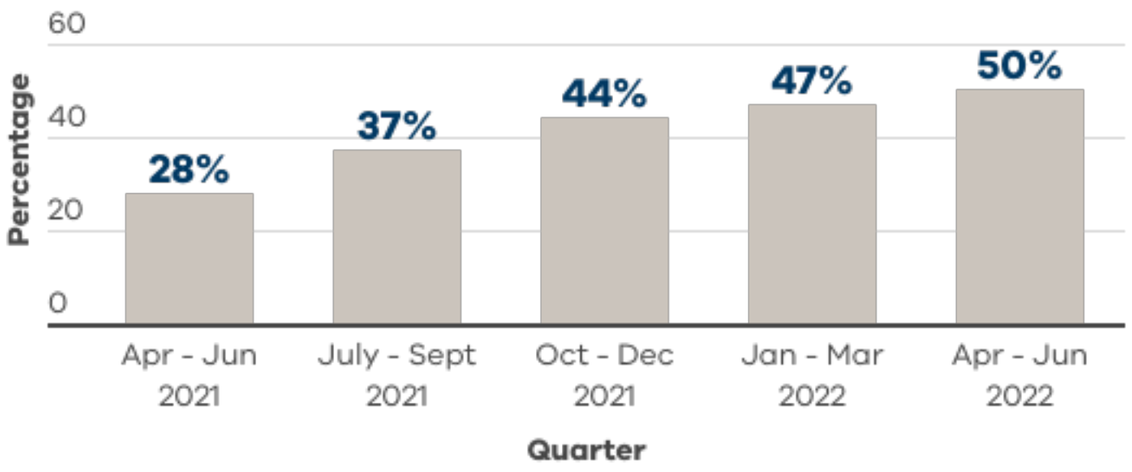
2.2. WHAT WE FOUND

5,476 or 44 per cent of inspections conducted in the 21/22 financial year identified at least one compliance risk.

The significant increase in compliance risks observed on building sites in the first half of the year was a result of VBA's strategy to select more sites that had progressed beyond slab stage (by identifying slightly older permits), and by targeting practitioners of interest as a result of gained intelligence.

Further increases in compliance risk continued throughout the year which were driven by program enhancements; inspectors were directed to abandon sites where key components of a build (e.g. timber framing) were only partially built and return a few weeks later to carry out the inspection instead.

FY 2021/22 OBSERVED COMPLIANCE RISK – ALL INSPECTIONS



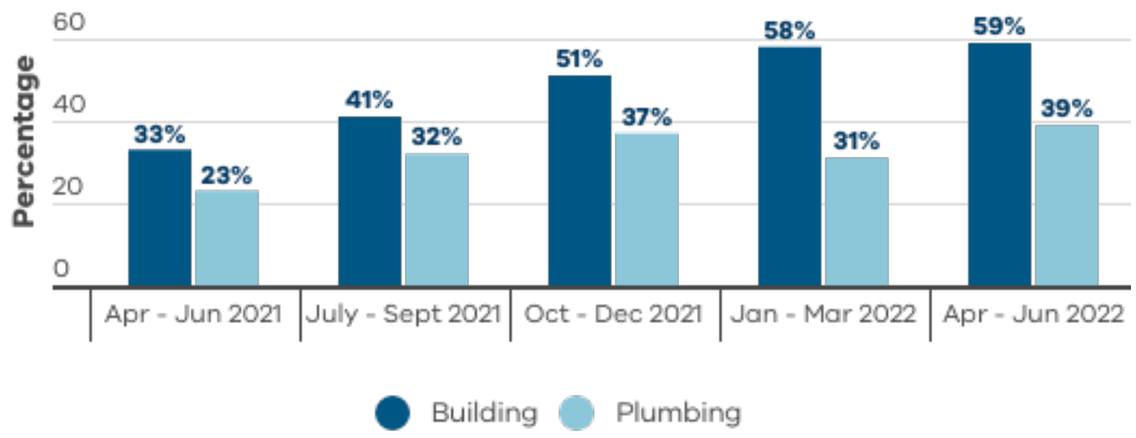
CRITICAL ISSUE

1.7 % of inspections identified non-compliant issues of a severity that could result in adverse effects on safety or amenity, financial loss for future occupants or loss of structural integrity if left untreated. This rate is consistent with previous years. Sites with OHS risks are reported in this category, with breaches referred to the relevant regulator on the same day. Details of the critical issues are outlined in Appendix 3.

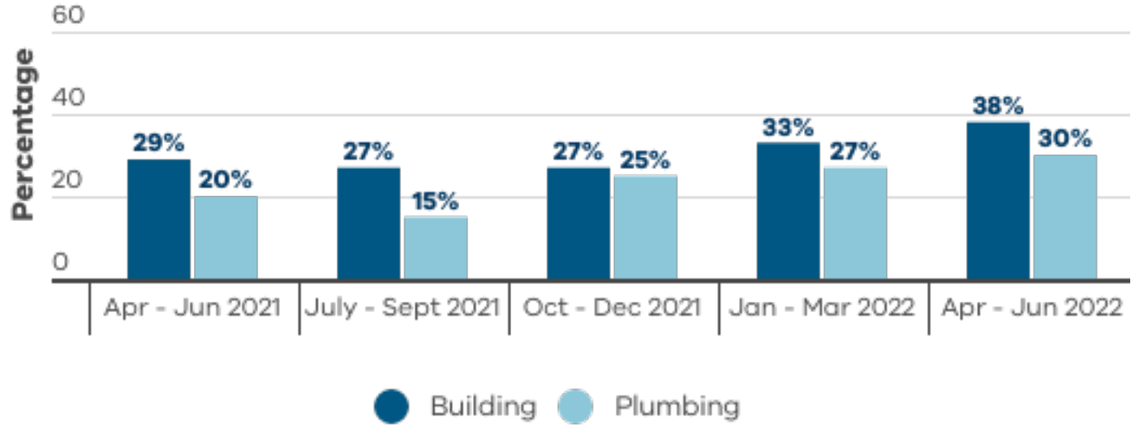
A compliance risk is defined as any non-compliant item (observed in a building under construction) which if not appropriately considered or addressed, has the potential to cause:

- an adverse effect on the safety or amenity of future building occupants and/or the public; and/or
- financial loss for future occupants or loss of structural integrity.

FY 2021/22 OBSERVED COMPLIANCE RISK - DOMESTIC WORKS



FY 2021/22 OBSERVED COMPLIANCE RISK - COMMERCIAL WORKS



2.3. ACTIONS TAKEN BY THE VBA IN FY 2021/22

The VBA sent 5,476 notifications to practitioners requiring them to respond to the compliance risks identified by the Proactive Inspections Program. Typically:

- 15 per cent to 18 per cent of the notifications sent to practitioners resulted in them providing all relevant documents (such as an approved performance solution, engineering drawings or certificate of compliance from a registered practitioner) showing how the work meets the requirements of the relevant building legislation. This is because practitioners are not currently required to lodge this documentation with the VBA.
- 1 per cent to 2 per cent of the notifications resulted in them demonstrating the work was incomplete rather than non-compliant and would be resolved as the build progresses.
- The remaining notifications of non-compliant work identified required rectification and the practitioners must provide the relevant building surveyor (RBS) or the VBA with proof the work has been brought into compliance.

2.4. ENFORCEMENT ACTIVITY

The VBA expects the relevant building surveyor RBS to manage any required rectification using their enforcement powers.

Typically, a verbal Direction to Fix is issued to the builder. However, depending on the severity and risk of the issue, the RBS may choose to issue a written Direction to Fix (DtF) or a Building Notice to the builder or owner and notify the VBA. The VBA monitors all sites needing rectification to ensure the appropriate work is carried out.

In exceptional circumstances, the VBA will issue a written Direction to Fix to the builder instead of the RBS. This may occur when the RBS appears to have contributed to the non-compliance or where the issuance of an occupancy permit is imminent, and the VBA wants to ensure the non-compliance is addressed before the property is handed over to the owner. In FY 2021/2022, the VBA issued no written Direction to Fix.

WHO RECEIVES THE NOTIFICATIONS?

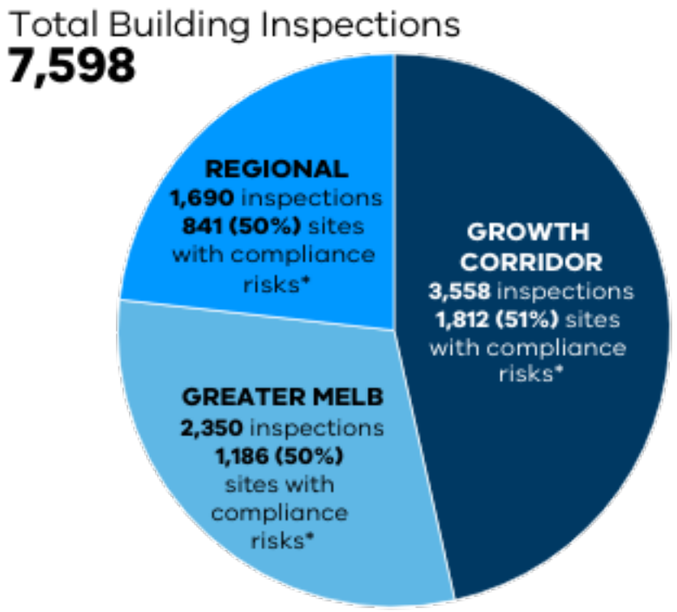
The builder and RBS are notified when compliance risks are identified. However, the builder is the primary addressee for potentially non-compliant building work if the elements have not been subject to a mandatory inspection stage. Where elements have been subject to mandatory inspection, the RBS is the primary addressee.

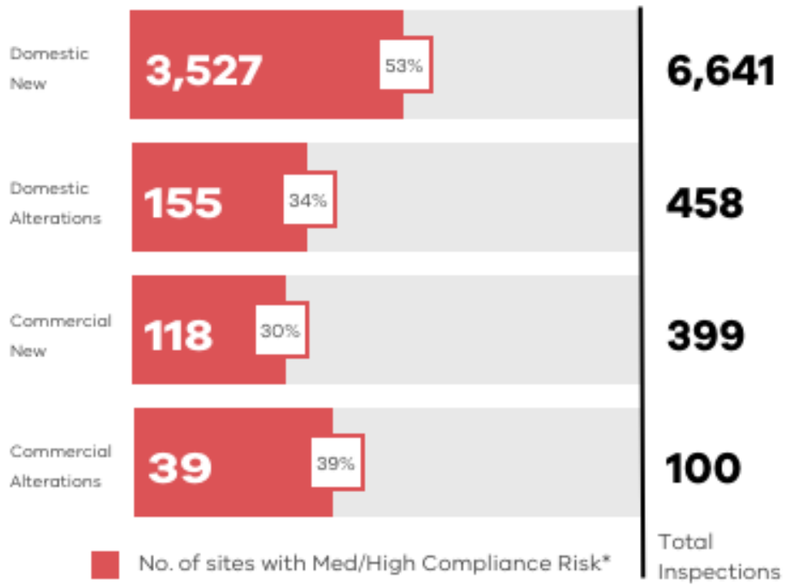
The RBS will also be the primary addressee when the endorsed building permit documentation is considered to lack sufficient information to show compliance for the purposes of the inspection (such as a performance solution) or in situations where the RBS has not considered mandatory items (such as fire separation in dual-occupancy buildings).

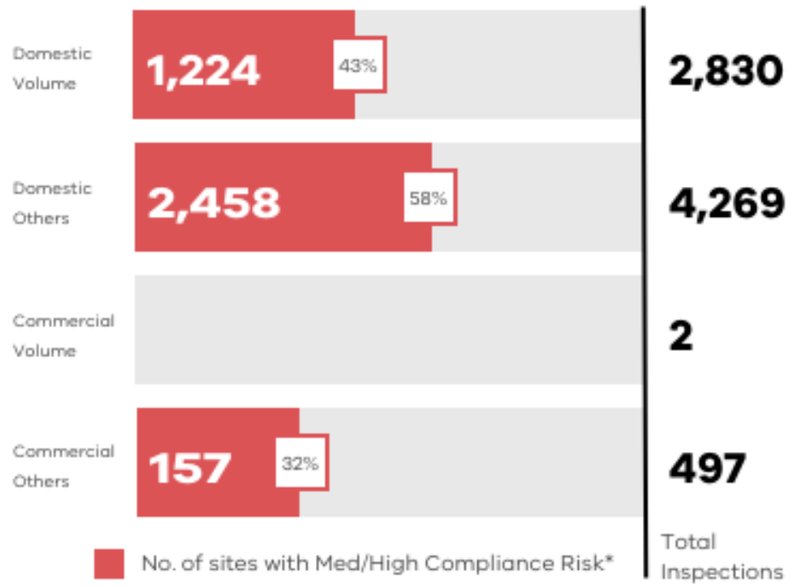
The builder is also the primary addressee for potentially non-compliant plumbing work because the plumber is not named in the building permit documents. The VBA relies on the builder to provide the plumber's details. If provided, the VBA will also notify the plumber of any potential issues.

BUILDING INSPECTIONS FY 2021/22

3.1. OVERVIEW OF BUILDING INSPECTIONS CONDUCTED IN FY 2021/22







GEOGRAPHIC TRENDS

Volume – Greater Melbourne Growth Corridors had the highest number of inspections undertaken as this is where building permit activity was the greatest.

Inspection outcomes – Prevalence of non-compliant issues observed on building sites were consistent across all regions of Victoria. This trend was mostly consistent across the year except for Q2 where issues observed on building Growth Corridors was 44 per cent.

NEW BUILDS VS ALTERATIONS

Volume – 'New Builds' had the highest number of inspections undertaken, where building permit activity is also the greatest.

Inspection outcomes – a much higher prevalence of non-compliant issues was observed during inspections of New Buildings (53%), compared to buildings going under Alterations (34%) in domestic building sites.

A different trend was observed in commercial building sites. Buildings undergoing alterations had the highest prevalence of non-compliant issues (39%) compared to New Builds (30%).

These trends in compliance risk observed on building sites were consistent across all four quarters.

VOLUME VS OTHER BUILDERS

Volume – Large Volume Builders, proportionately have a higher volume of inspections undertaken because Large Volume Builders typically build new dwellings in growth corridor areas of Melbourne.

Inspection outcomes comparisons – a lower prevalence of non-compliant issues was found during inspections of sites managed by Large Volume Builders, compared to all other builders. This trend was consistent across all four quarters.

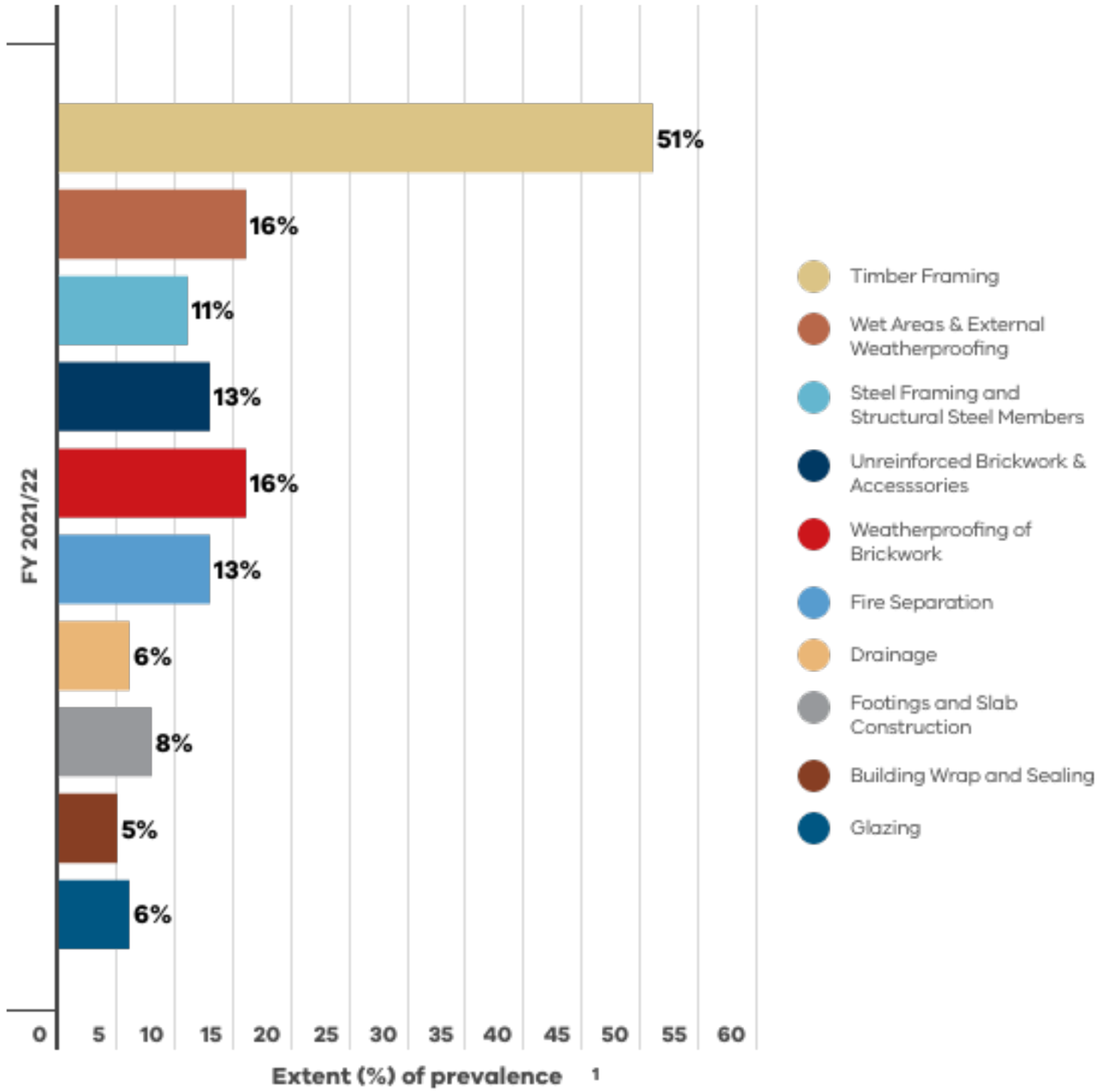
The VBA uses trends to update its risk-based site selection. This ensures sites are selected based on the highest risk of adverse effect on the safety and/or amenity of future building occupants, and the public.

*Number of sites inspected with at least one medium/high compliance risk observed.

3.2. OVERVIEW OF COMPLIANCE RISKS OBSERVED

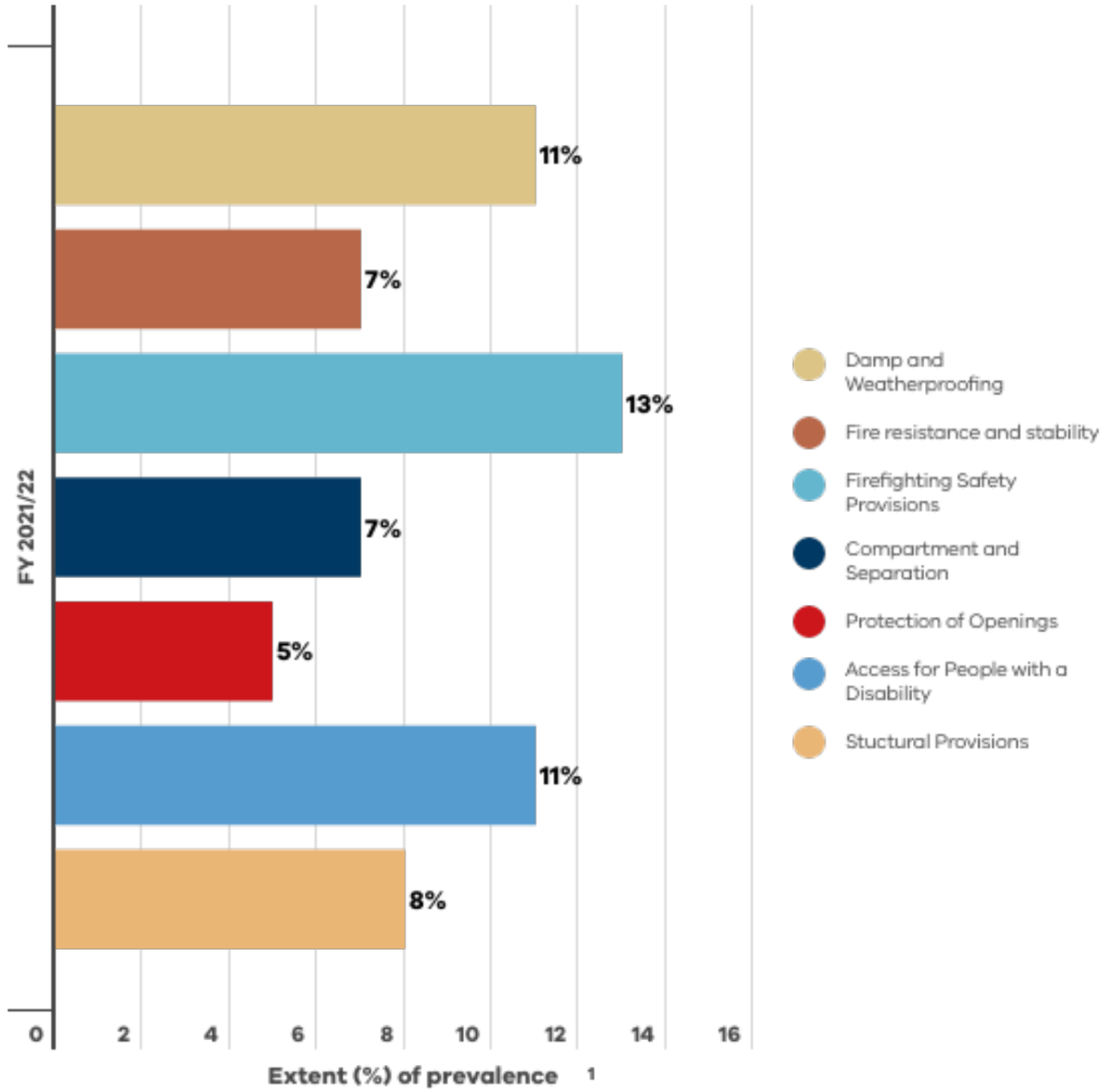
DOMESTIC

The most prevalent categories where non-compliance risks are observed (excluding low risk), remain consistent each quarter.



COMMERCIAL

The most prevalent categories where non-compliance risks are observed (excluding low risk), remain consistent each quarter.



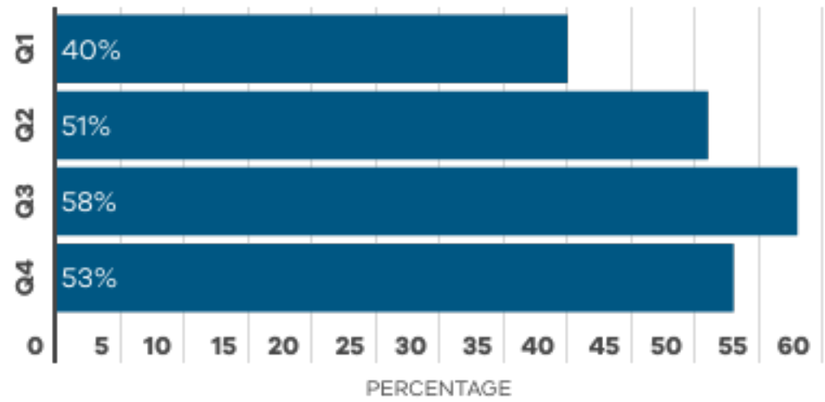
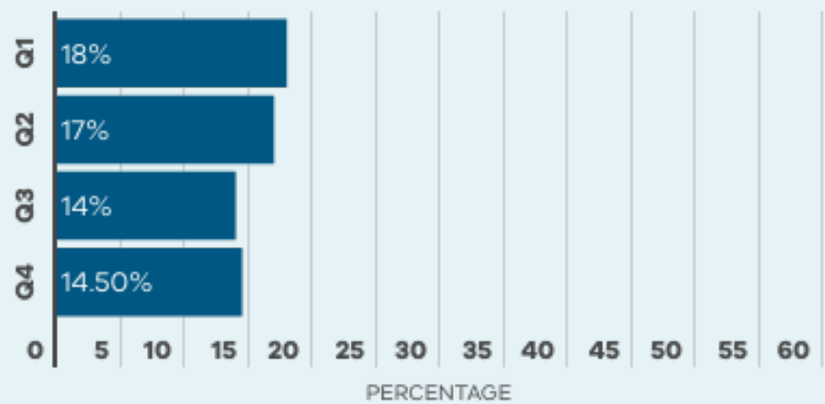
[1] Extent (%) of prevalence is calculated by 'number of times an item was observed as non-compliant over the number of times an item was inspected'.

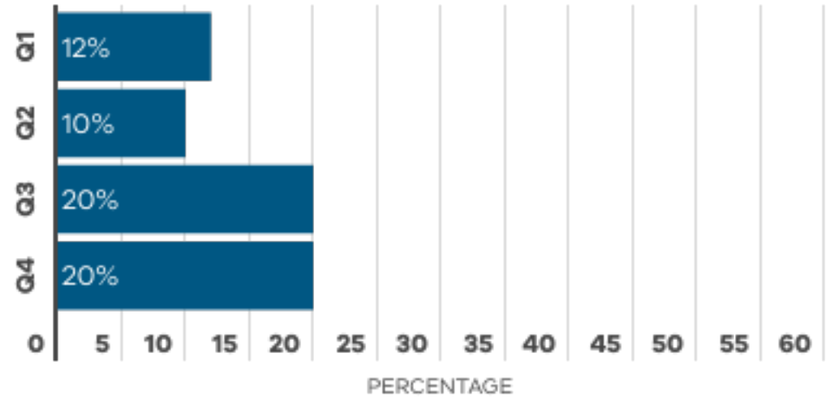
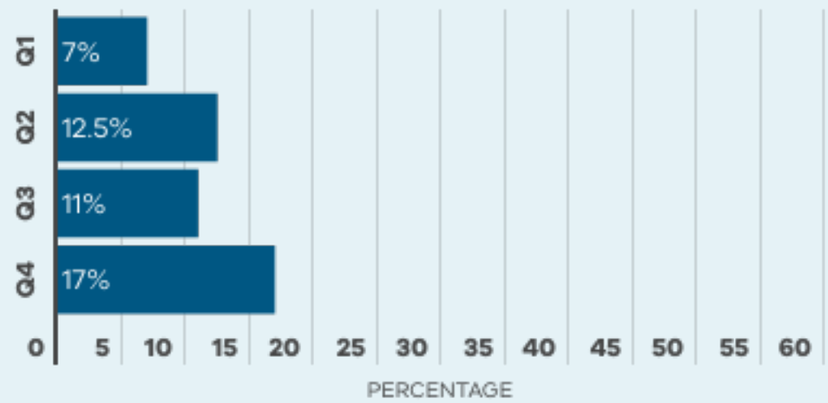
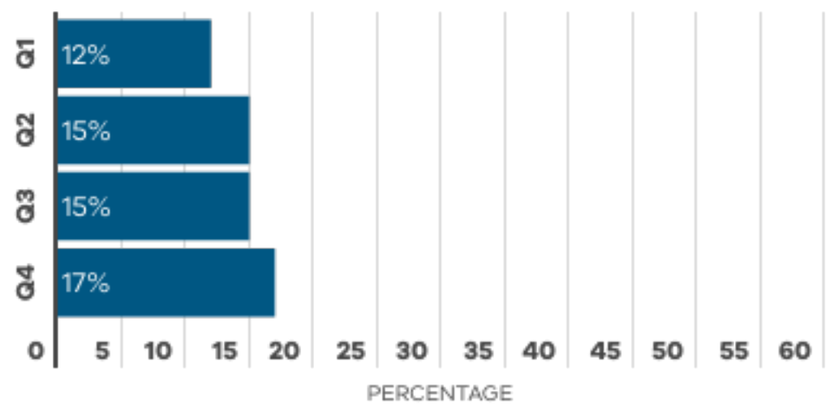
3.3. OVERVIEW OF COMMON NON-COMPLIANT ITEMS OBSERVED

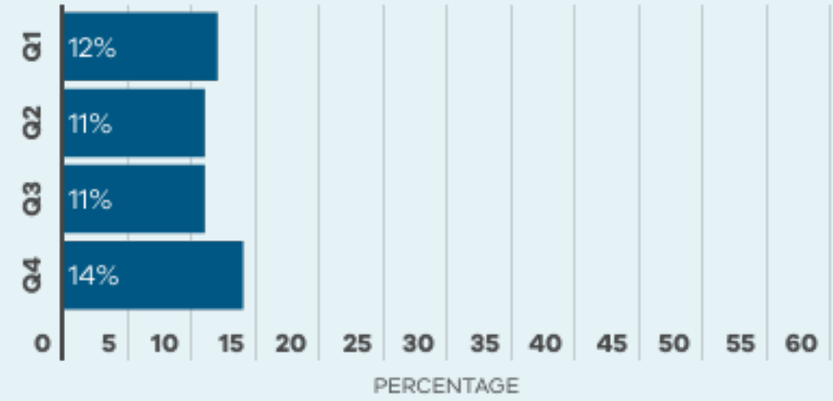
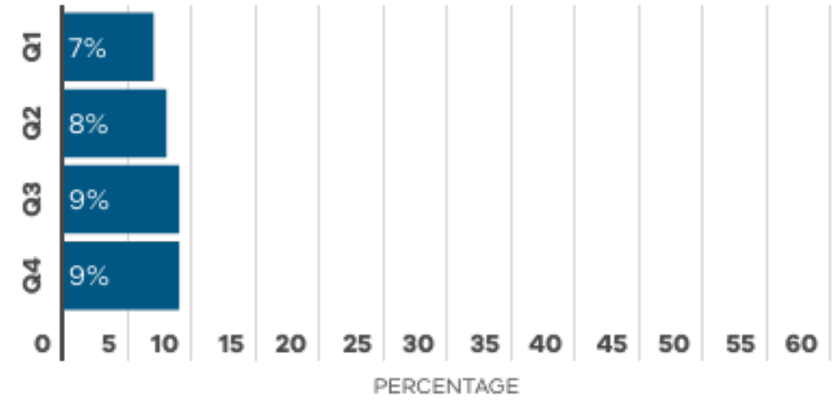
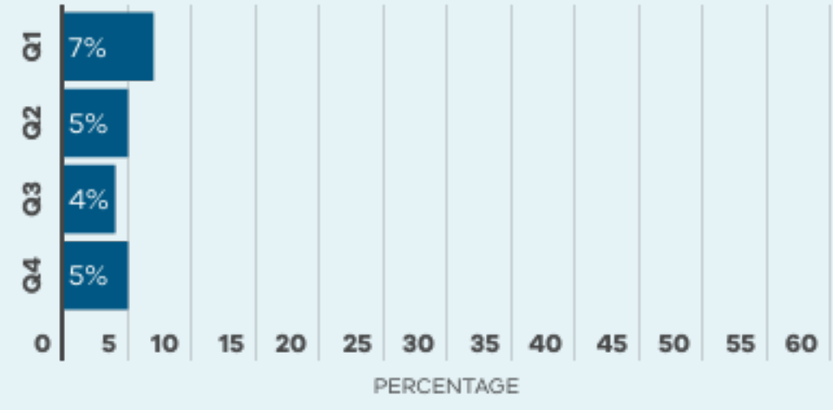
DOMESTIC

Approximately 30,000 elements were assessed across **7,099 domestic building sites** in FY 2021/22 (an average of 15 elements per inspection), of which **7,042 elements were identified as a compliance risk (across 3,368 sites)** and required rectification or justification. Of these elements 235 were critical (across 157 sites) and required immediate attention.

The most common non-compliances observed within the TOP EIGHT CATEGORIES

Building Category	No. of non-compliant items in category	Common non-compliance in each category	Prevalence per quarter
Timber Framing	**2,071**	• Non-compliant penetrations due to services (mostly plumbing). • Insufficient fixing, for example, nails used instead of bolts or failure to use two nails per stud in various items. • Bottom plate overhang >10mm. • Lintels missing from windows and door openings.	
Wet Areas and External Water Proofing	**290**	• Water stop missing from wet areas (around bath hob beneath bath flange, shower enclosures, wet area thresholds and doors, floor junction of wet areas). • Standard plaster used behind laundry troughs. • Shower/bathroom waterproofing damaged. • Timber plates used on balcony are not of H4 or greater treated timber.	

Building Category	No. of non-compliant items in category	Common non-compliance in each category	Prevalence per quarter
Weatherproofing of Masonry	**226**	• Sill flashings not installed as required by manufacturer. • Damp proof course not extending to face of masonry. • Weep-holes to openings missing, weep-holes obstructed at garage slab, rendered weep-holes not cleaned out.	
Fire Safety	**397**	• Fire separating wall system not installed in accordance with manufacturer installation requirements (No silicone along bottom track, no 20mm gap between frame and shaft liner, L clips are placed mid-way, clips not located at every stud, no mineral wool installed at wall junctions, brackets not installed on both sides of separating wall, use of damaged panels, using nails and not screws). • Gaps and holes in fire separation system between dwellings. • 60/60/60 FRL not achieved on garage boundary walls.	
Unreinforced Masonary and Accessories	**565**	• No lintel over meter box. • Brick ties missing or not attached to studs and expansions ties upside down. • No expansion foam within articulation joints. • No gaps at window where articulation joint is located.	

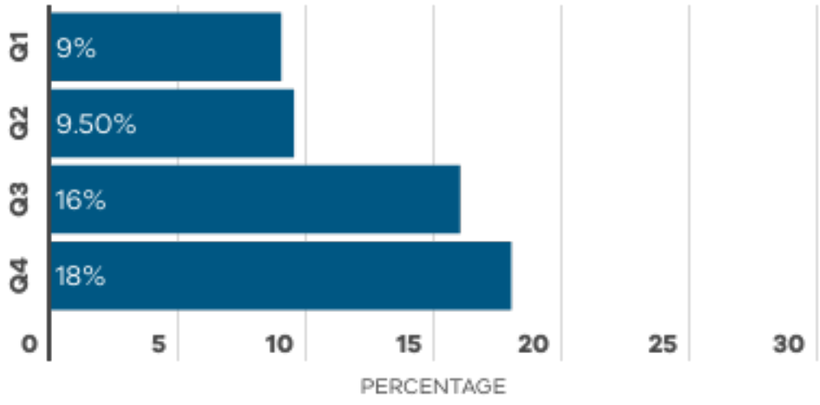
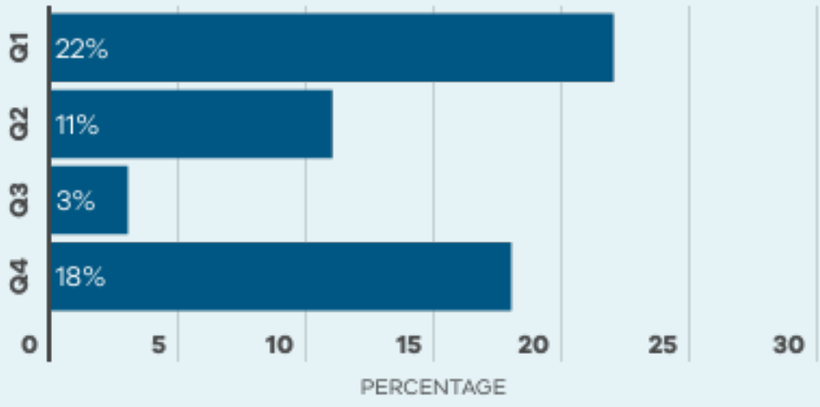
Building Category	No. of non-compliant items in category	Common non-compliance in each category	Prevalence per quarter
Steel Framing and Structural Steel Member	**458**	• Lintels not galvanised. • No structural grout under base plate of columns. • Structural integrity - Insufficient tightening of bolts at baseplates and steel member connection. Missing bolts and nuts not tightened to maintain structural integrity.	
Footings and Slab Construction	**462**	• Brickwork overhang. • Reinforcing steel exposed in slab edge. • Slab cut for plumbing services.	
Drainage	**264**	• Water pooling around foundations. • No step down in garages, step-downs less then 50m from dwellings. • Garage slabs lower than ground level without appropriate drainage. • Finished Floor Level of dwelling below finished surface level.	

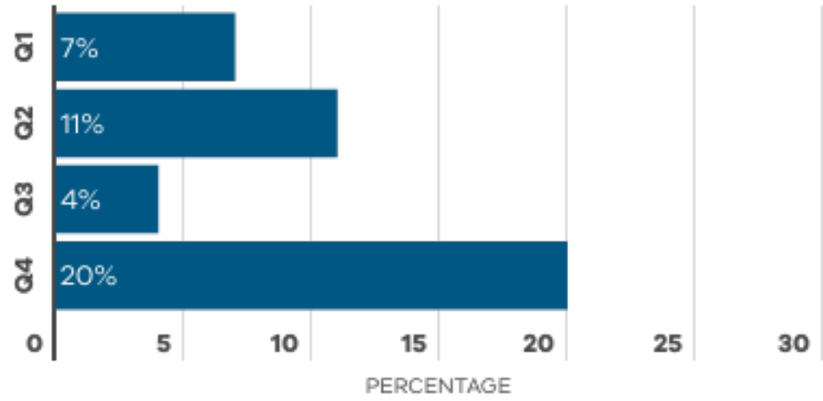
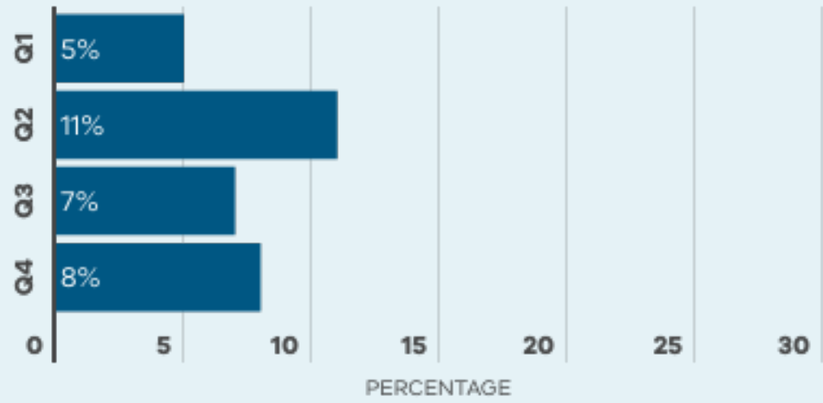
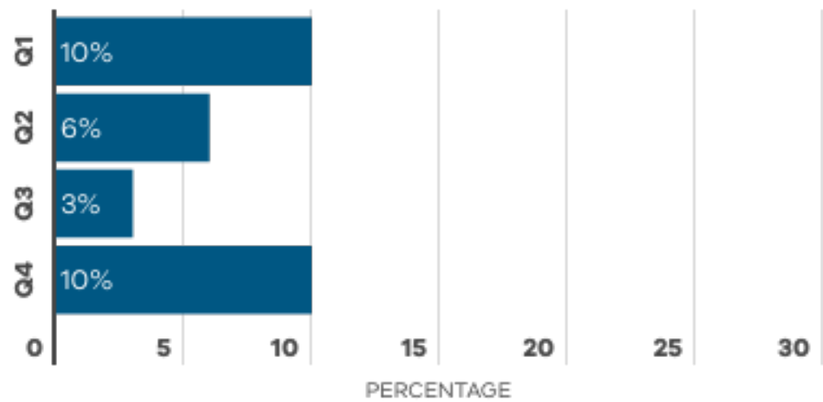
3.3. OVERVIEW OF COMMON NON-COMPLIANT ITEMS OBSERVED

COMMERCIAL

Approximately 6,400 elements were assessed across **502 commercial building sites** in FY2021/22 (an average of 13 elements per inspection), of which **336 elements were identified as a compliance risk (across 151 sites)** and required rectification or justification.
There were eight critical issues identified across three sites.

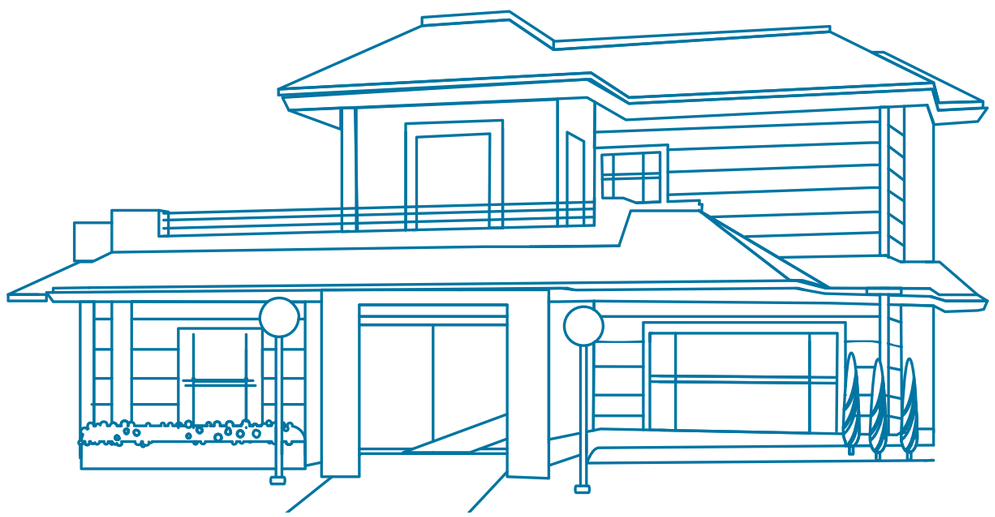
The most common non-compliances observed within the TOP FIVE CATEGORIES

Building Category	No. of non-compliant items in category	Common non-compliance in each category	Prevalence per quarter
Fire Safety Provisions	**99**	• No temporary portable fire extinguishers provided to site or installed to every floor during construction. • Clearance between fire hydrant not achieved e.g. clearance around the valve handwheel to the fire hydrant. Minimum width of 1m not provided between hydrant and stair balustrading between basement and ground floor fire isolated stair well. • Booster assembly located within 10m of the front wall of the building without compliant shield wall. • Fire isolated exit riser heights are not consistent with adjacent riser variations greater than 5mm. • Fire-resistant door-sets have not been installed in accordance with AS1905, jamb cavities have not been backfilled in accordance with section 5.	
Damp and Weatherproofing	**16**	• No thresholds at doorways. • Vertical upturn of membrane between internal and external balcony not achieved. • No overflow provision provided to external balconies. • Inadequate fall for floor wastes in bathroom.	

Building Category	No. of non-compliant items in category	Common non-compliance in each category	Prevalence per quarter
Access for People with a Disability	**20**	• Hinge side clearance not provided. • Decals not contrasting. • Circulation space not provided. • Handrail heights not within compliant range.	
Structural Provisions	**32**	• Structural integrity compromised for service openings. • Exposed steel at slab edge to accommodate the relocation of plumbing services. • Non-compliant penetrations due to services.	
Fire Resistance and Stability	**23**	• Timber noggins within the steel frame forming part of the fire rated separating wall. • Unprotected penetration within separating walls and apartment floors. • C1.5 concession incorrectly applied, and Type C construction applied when Type B is applicable.	

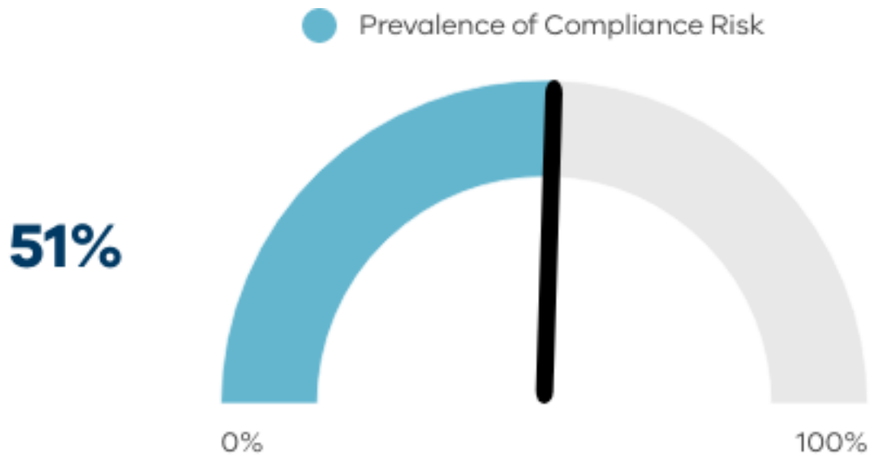
3.4. COMPLIANCE RISK PREVALENCE - SINGLE VS DUAL OCCUPANCY DWELLINGS

SINGLE OCCUPANCY

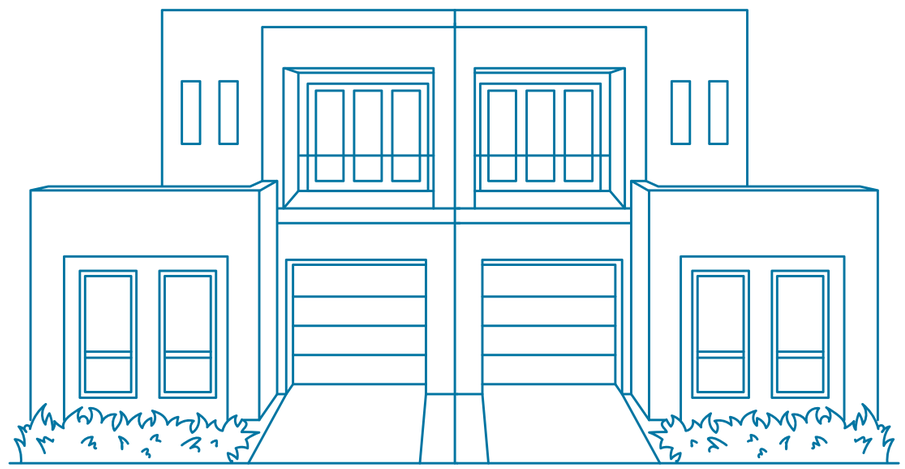


Common Building Issues

- Timber Framing
- Weatherproofing of Brickwork
- Unreinforced Brickwork and Accessories
- Waterproofing and External Weatherproofing
- Footings and Slab Construction
- Fire Separation

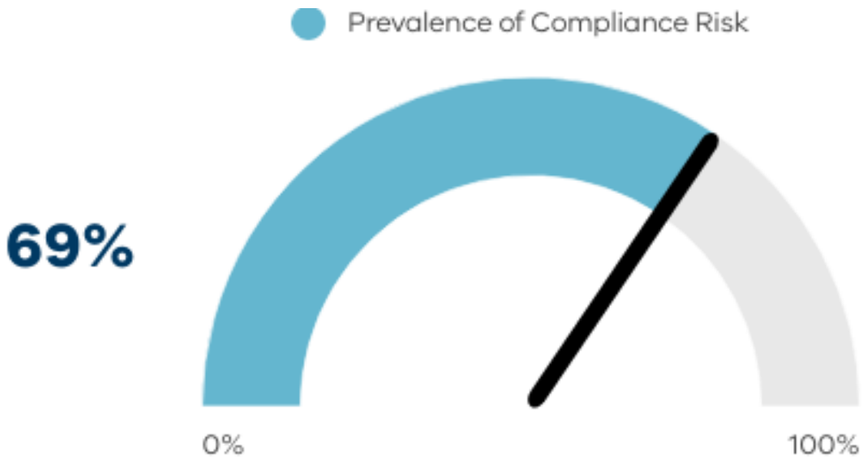


DUAL OCCUPANCY



Common Building Issues

- Fire Separation
- Timber Framing
- Steel Framing and Structural Steel Members
- Footings and Slab Construction
- Unreinforced Brickwork and Accessories
- Drainage



3.5. PREVALENCE OF BUILDING COMPLIANCE RISKS BY CLASS

Class	No. of sites inspected	% of compliance risks across class from all inspections	Areas of serious compliance risk for building
Domestic (Class 1 and 10)	**7,099**	**47%**	• Timber Framing • Wet Areas and External Waterproofing • Weatherproofing of Brickwork • Unreinforced Brickwork and Accessories • Fire Separation • Steel Framing and Structural Steel Members • Footings and Slab Construction • Drainage
Apartments ≥2 sole occupancy (Class 2 + mixed use) and group dwellings and hospitals (Classes 3, 4, 9a&c)	**216**	**42%**	• Fire Fighting Equipment, Provision of Escape, Construction of Exits • Fire Resistance and Stability • Structural Provisions • Compartment and Separation • Damp and Weatherproofing • Protection of Openings
Assembly building with no dwellings (Class 9b)	**84**	**18%**	• Structural Provisions • Fire Resistance and Stability • Fire Fighting Equipment, Provision of Escape, Construction of Exits

Class	No. of sites inspected	% of compliance risks across class from all inspections	Areas of serious compliance risk for building
Office buildings and cafes, shops and markets with no dwellings (Classes 5, 6 + mixed use)	**71**	**27%**	• Fire Fighting Equipment, Provision of Escape, Construction of Exits • Access for People with a Disability • Emergency Lighting, Exit Signs and Warning Systems
Warehouse and factories and carparks – no dwellings (Classes 7a, 7b, 8)	**40**	**25%**	• Fire Fighting Equipment, Provision of Escape, Construction of Exits • Access for People with a Disability • Structural Provisions

3.6. CASE STUDIES

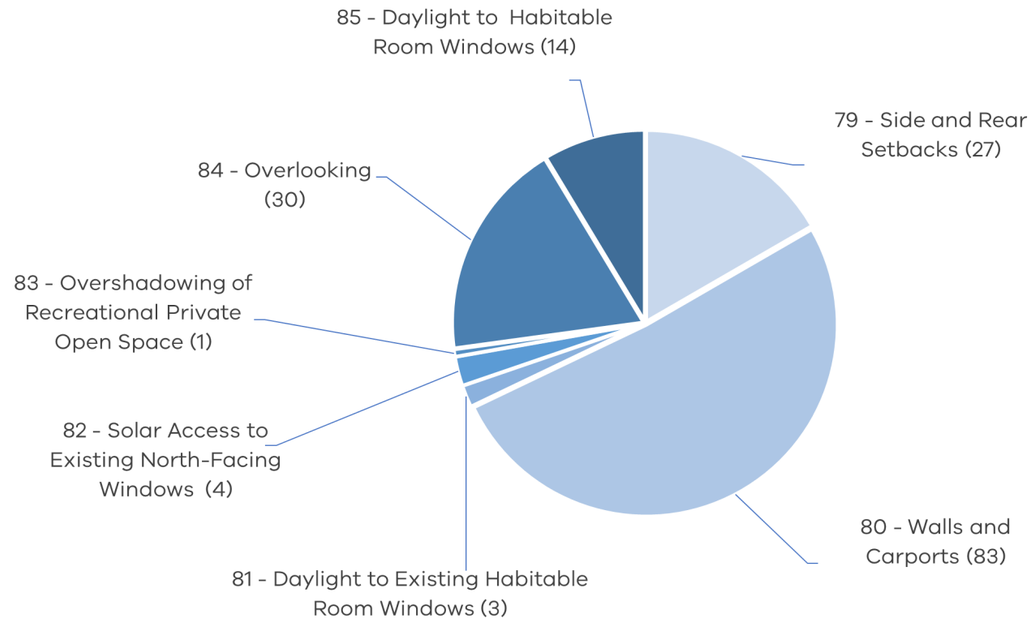
3.6.1. SITING - NON-COMPLIANCES

Overview

Non-compliant siting elements such as overlooking on to secluded private open space, side and rear setbacks and daylight to habitable room windows, comprised 1.9 per cent of issues observed in the Proactive Inspections Program (PIP) for the 2021-22 financial year.

One hundred and forty three (143) sites were found to have a compliance risk with the Siting requirements under Part 5 of the Building Regulation 2018 with 'Walls and Carports on boundaries' and 'Overlooking' the most prevalent issues.

Siting issues can be difficult and costly to correct once building work is completed and early identification through PIP avoids impacting the amenity of adjoining owners and future occupants.



EXAMPLES OF SITING ISSUES CORRECTED DUE TO A PROACTIVE INSPECTIONS:

Overlooking

A proactive inspection of a double storey dwelling in Greater Melbourne, found the kitchen window was overlooking on to adjoining neighbours secluded private open space and directly into habitable room windows.

The VBA contacted the RBS who reported that the nominated adjoining property's fence height, (2.45m on the plan), was not consistent with the actual height of the fence and that he will ensure suitable measures to prevent overlooking will be enforced. The VBA closed these matters after receiving confirmation the existing fence will be replaced by a 2.45m fence, to comply with the siting requirements.

Daylight to habitable room windows

A proactive inspection of a single storey dwelling in Greater Melbourne, found that daylight to habitable room windows had not been achieved along the side of the dwelling where the eave, fascia and gutter reduced the clear to sky dimension to less than 1m. The VBA contacted the RBS who reported the eaves were not constructed in accordance with the plans which did not have the eaves overhanging the windows. The VBA closed the matter after receiving photographic evidence the eaves were removed above the windows.

BEFORE

AFTER

3.6.2. FIRE SEPARATION – NON-COMPLIANCES WITH P2.3.1 SPREAD OF FIRE

Overview

Fire separation issues between domestic dwellings are consistently observed during proactive inspections, particularly dual occupancy buildings; 13% of fire separation items inspected were non-compliant in FY2021-22 and in dual occupancy buildings the prevalence increases to 41 per cent.

Three hundred and nintey seven (397) sites were found to be non-compliant with P2.3.1 (Spread of fire requirements) and the majority (approximately 74 per cent) were due to poorly constructed fire separating wall. Other common problems included, close proximity of openable window and decks to property boundaries that were not fire rated, separating masonry walls that were short in length and/or not constructed high enough to meet the required gap of less than 200mm to the underside of roof cladding, and expanded polystyrene (EPS) used on the boundary walls.

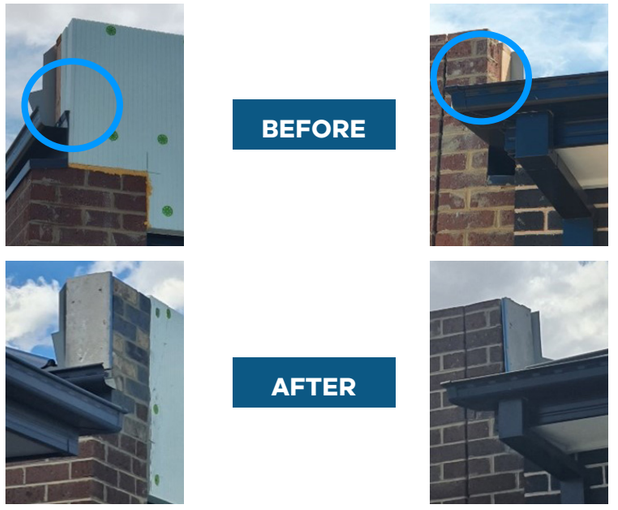
EXAMPLES OF FIRE SEPARATION ISSUES CORRECTED DUE TO A PROACTIVE INSPECTION

EPS cladding on the property boundaries and height of brick work

A proactive inspection of a new single storey dwelling in Greater Melbourne found timber/EPS cladding on the property boundaries that were not protected with fire resisting material. Additionally, the brick veneer fire resisting walls, constructed within 900mm of the property boundaries, terminated 300mm from the underside of the non-combustible roof covering; Part 3.7.2 of BCA (Volume 2) requires a gap of no more than 200 mm. The photos relate to the garage wall and rear wall of the dwelling.

The VBA contacted the RBS and builder to rectify the issue and the VBA closed the matter upon receiving photographic evidence of additional brick work, (to raise its height and reduce the gap between the capping and gutter to less than 200mm), and fire resistant material added.

Additional brickwork



Fire resisting material added to the timber/EPS cladding on the boundary

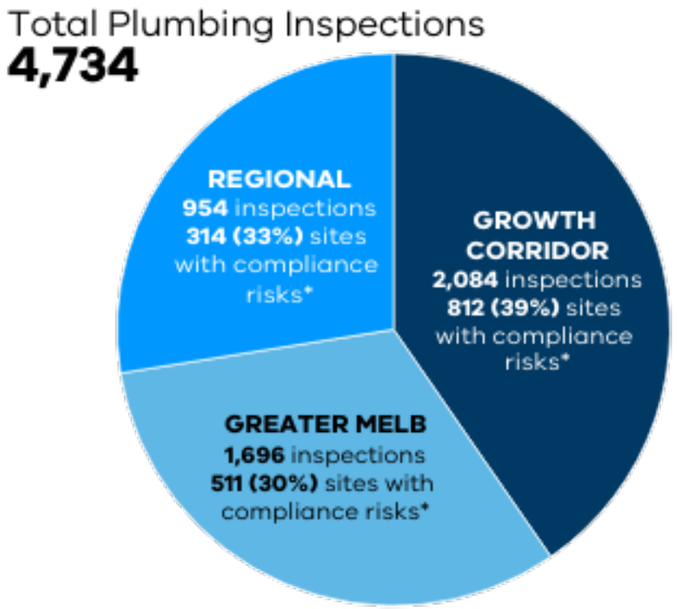
Window proximity

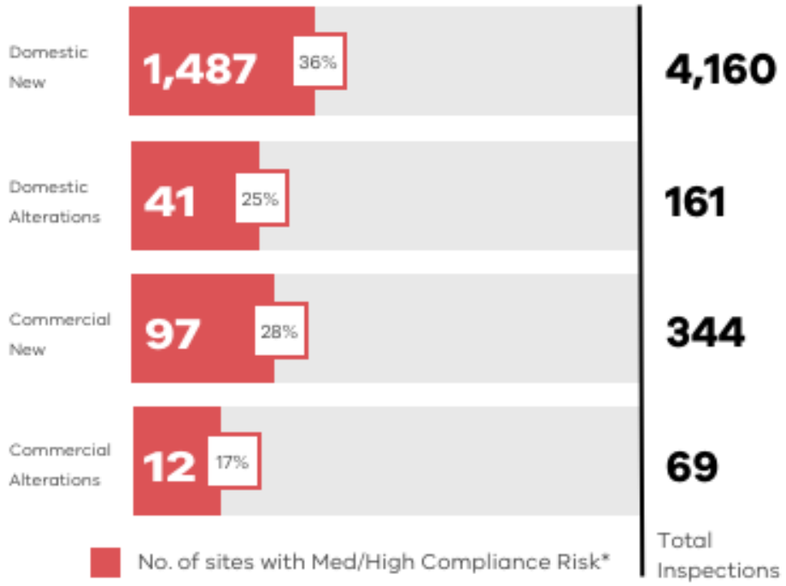
A proactive inspection of a multi-unit development in Greater Melbourne, observed windows located within 1.8m of another building on the same allotment without being protected in accordance with Part 3.7.2.4 of BCA (Volume 2).

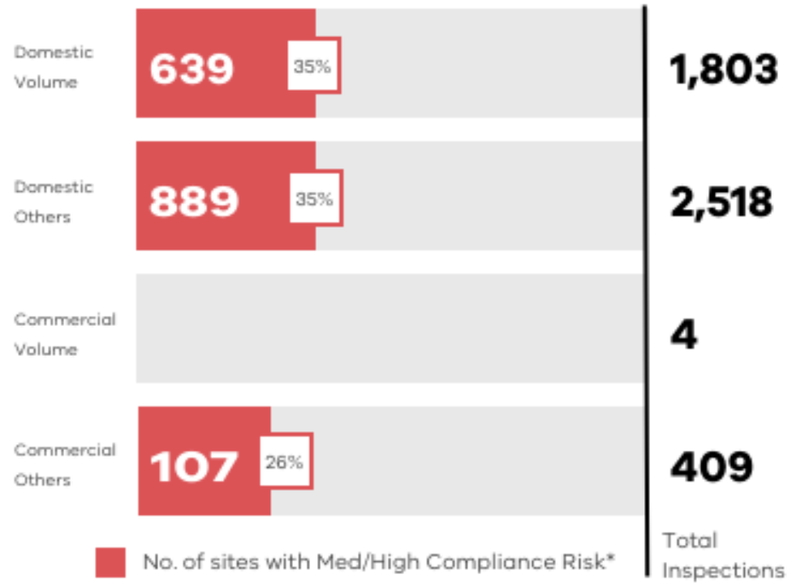
The VBA contacted the RBS and builder to rectify the issue and the VBA closed the matter upon receiving the RBS approved revised design of the dwelling.

PLUMBING INSPECTIONS FY 2021/22

4.1. OVERVIEW OF PLUMBING INSPECTIONS CONDUCTED FY 2021/22







GEOGRAPHIC TRENDS

Volume – Greater Melbourne Growth Corridors had the highest number of inspections undertaken, as this is where building permit activity was the greatest.

Inspection outcomes – prevalence of non-compliant issues observed during plumbing inspections were consistent across all regions of Victoria.

This trend was mostly consistent across all four quarters except for Q1 where issues observed on building Growth Corridors was 41% compared to Greater Melbourne that was 26%.

NEW BUILDS VS ALTERATIONS

Volume – New Builds had the highest number of inspections undertaken, where building permit activity is also the greatest.

Inspection outcomes – a higher prevalence of non-compliant issues was observed during plumbing inspections of New buildings compared to buildings undergoing Alterations in both domestic and commercial.

This trend was mostly consistent across all four quarters.

LARGE VOLUME BUILDERS VS OTHER BUILDERS

Volume – Large Volume builders proportionately have a higher volume of inspections undertaken because Large Volume Builders typically build new dwellings in growth corridors areas of Melbourne.

Inspection outcomes comparisons – prevalence of non-compliant issues observed during plumbing inspections were consistent across all types of builders. This trend was consistent across all four quarters.

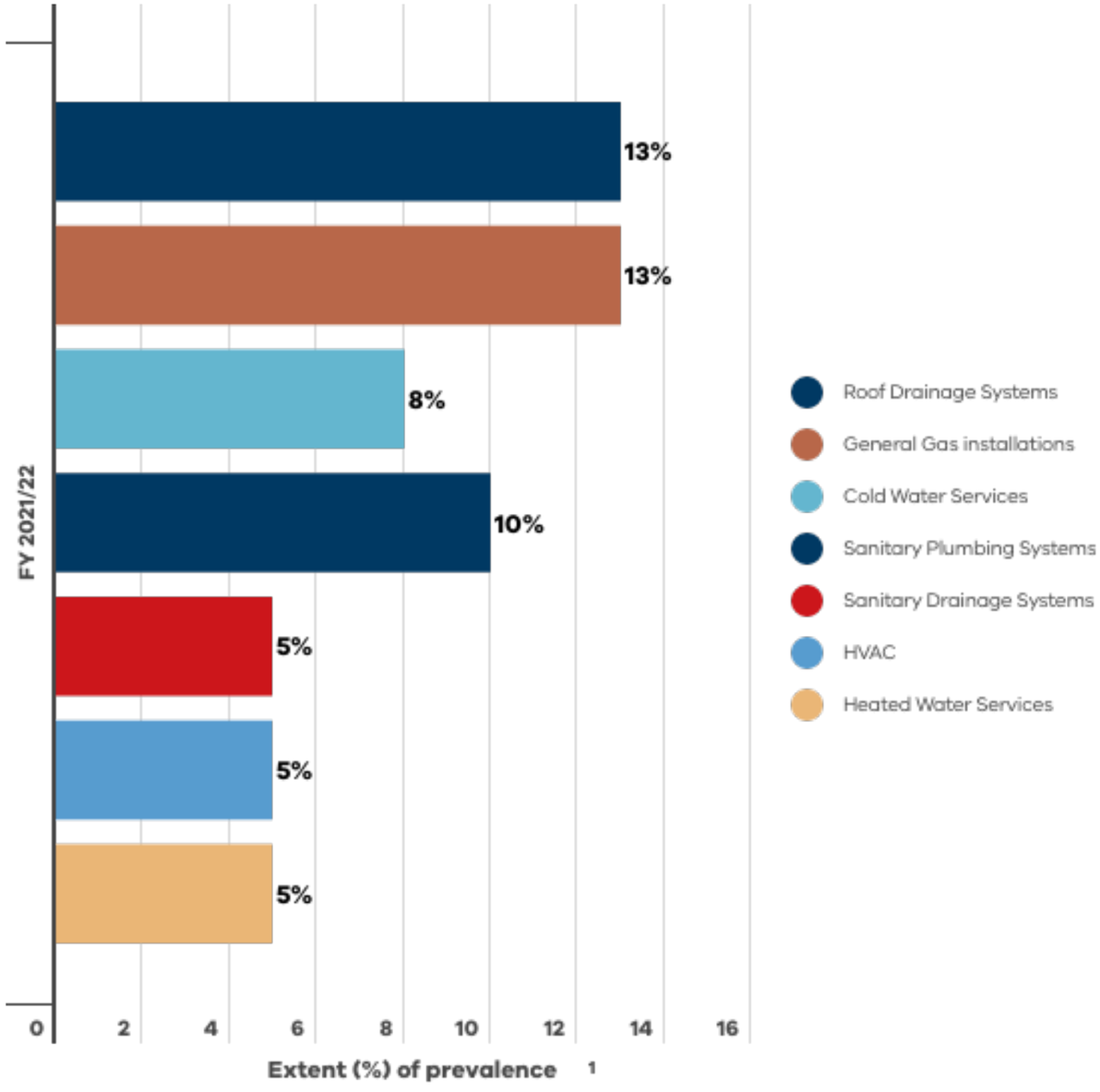
The VBA uses trends to update its risk-based site selection. This ensures sites are selected based on the highest risk of adverse effect on the safety and/or amenity of future building occupants, and the public.

*Number of sites inspected with at least one medium/high compliance risk observed.

4.2. OVERVIEW OF COMPLIANCE RISKS OBSERVED

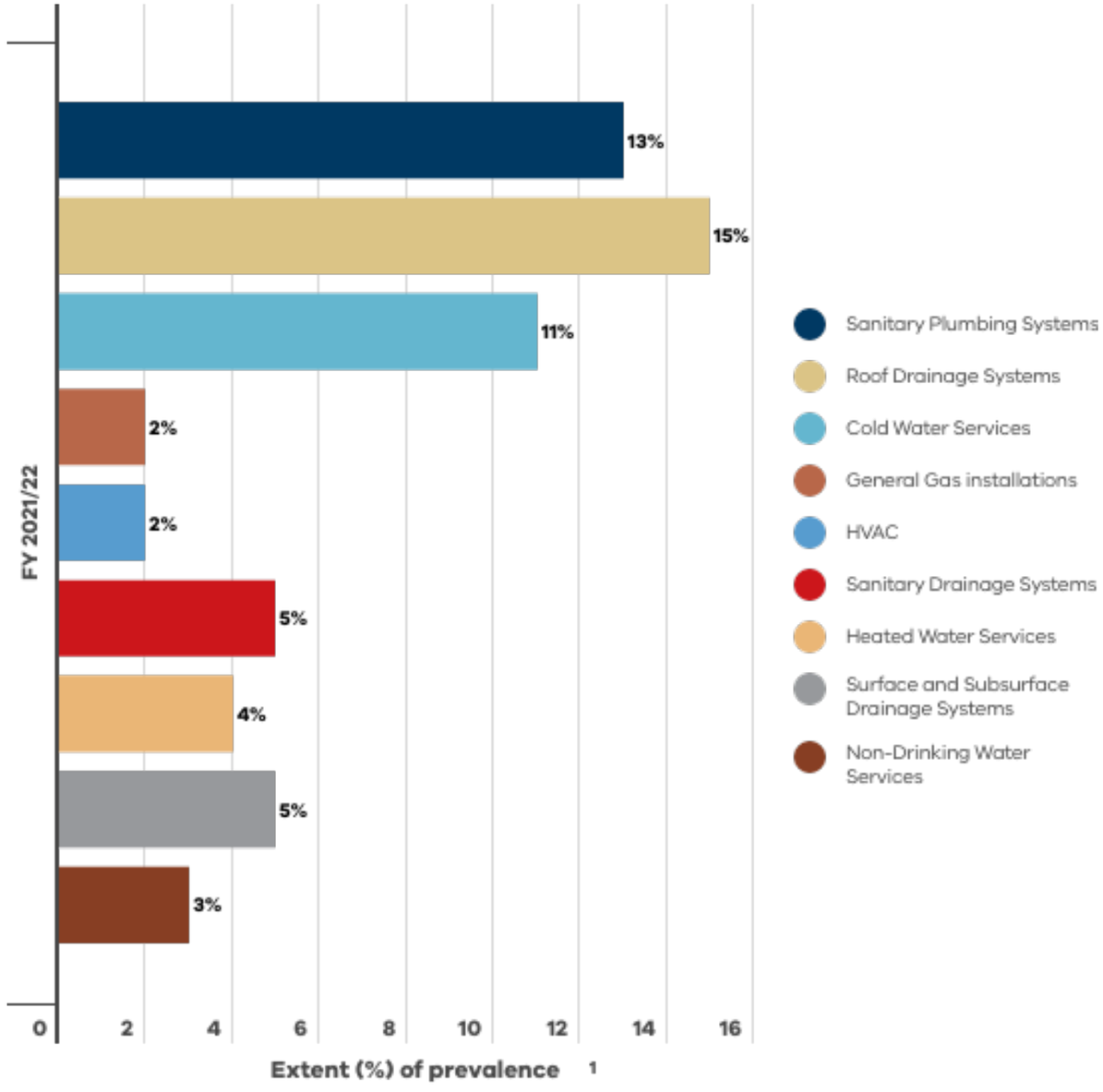
DOMESTIC

The most prevalent categories where non-compliance risks are observed (excluding low risk), remain consistent each quarter.



COMMERCIAL

The most prevalent categories where non-compliance risks are observed (excluding low risk), remain consistent each quarter.



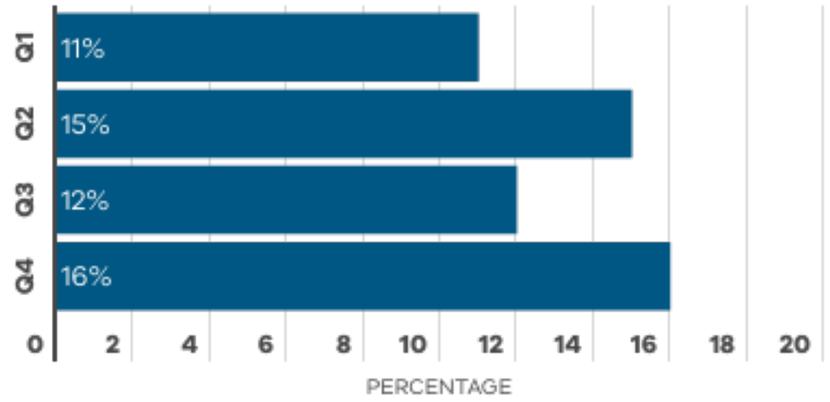
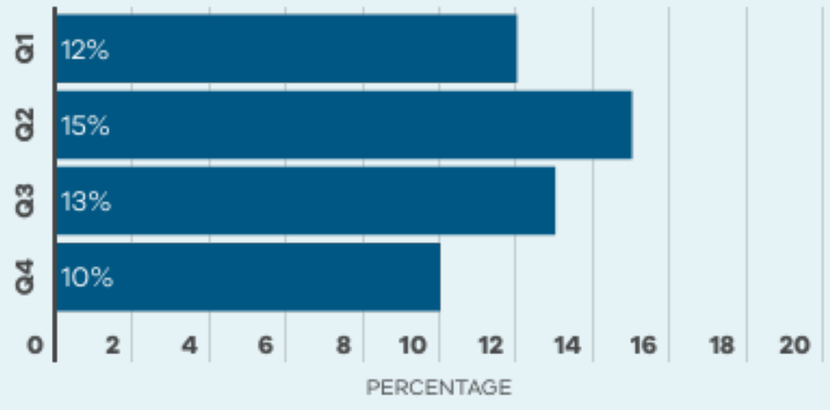
[1] These are approximate percentages only, which are calculated using the building stage most applicable to the area of compliance risk (i.e. the stage at which the plumbing work is mostly likely to be visible for inspection). For example, the percentage figure of non-compliant roof plumbing items was calculated by excluding the number of inspection performed at foundations and footings stage from the total number of inspections conducted.

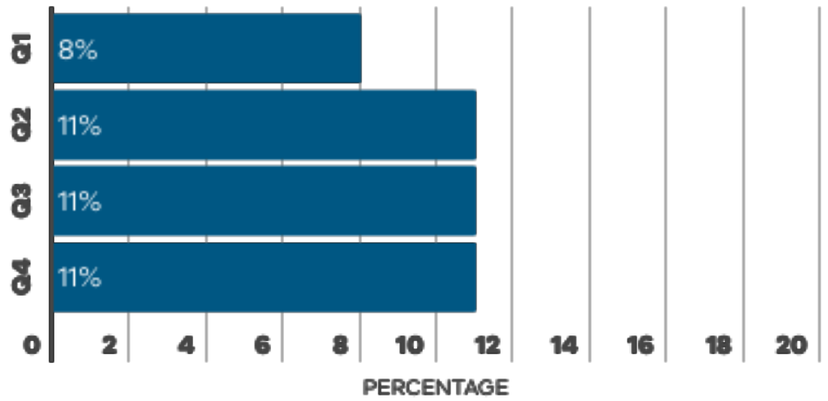
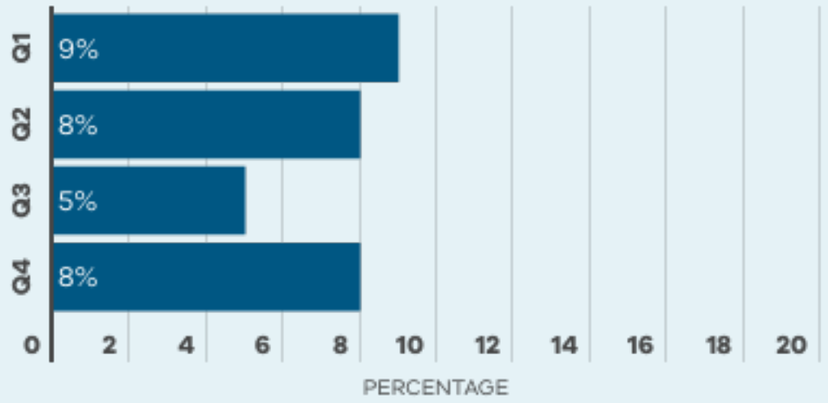
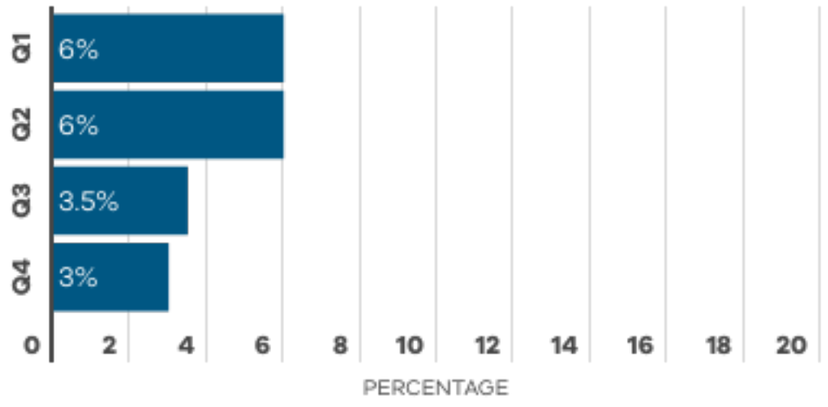
4.3. OVERVIEW OF COMMON NON-COMPLIANT ITEMS OBSERVED

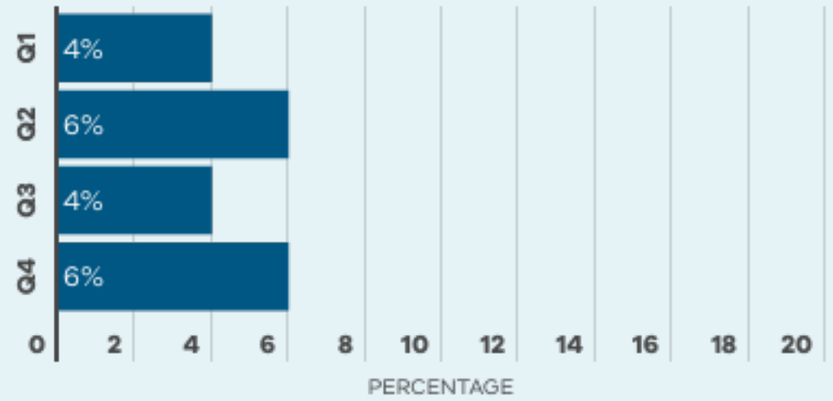
DOMESTIC

Approximately 50,000 elements were inspected across **4,321 inspections** (an average of 11 elements per inspection) and **2,674 elements (across 1,528 sites) were identified as a compliance risk** requiring rectification or justification. 65 critical issues (across 42 sites) were found that were mostly OHS issues.

The most common non-compliances observed within the TOP SIX CATEGORIES

Plumbing catergory	No. of non-compliant items in category	Common non-compliance in each category	Prevelance per quarter
General Gas Installation	**461**	• Gas flue clearance at a minimum of 500mm above roof is not achieved. • Insufficient separation of gas piping with other services (electrical and water). • Gradient to the ducted heater flue grading away from the appliance towards the flue elbow. • Reversion fittings not installed on the accessible multilayer gas piping. • Exposed multilayer gas pipe to UV and Proprietary gas piping not labelled at gas meter.	
Roof Drainage Systems	**437**	• Pressure flashing not constructed appropriately and not fixed at the required intervals and valley gutters not fixed at required intervals. • Sumps undersize and/or discharge through non-compliant side chutes. • Soaker flashing undersize and/or soaker flashing installed against the direction of flow and the stand appears to be undersized. • To support the suspended stormwater, drain at minimum required intervals and to fasten the downpipe at minimum required intervals. • Several ‘box gutter’ issues (change of direction, incorrectly terminated, reduced in size and/or insufficient overflow provision. Box gutter fixed to frame. • Multiple flashings/capping issues: Undersized, missing pressure flashings and pressure flashings applied to unsmooth brickwork. Spreaders discharging over flashings. Incorrect fall away from roof on parapet capping. Apron flashings not secured at 500mm intervals. Lead flashing not stepped/flushed.	

Plumbing catergory	No. of non-compliant items in category	Common non-compliance in each category	Prevelance per quarter
Sanitary Plumbing Systems	**340**	• Sanitary and drainage vents not supported appropriately and drainage vents with insufficient gradient. • 88–degree junctions installed on a graded sewer. • Expansion joints not clipped and not installed on above ground sanitary drains. • Junction fittings installed in exclusion zones at several sites.	
Cold Water Services	**275**	• Water services not protected through concrete slab. • Evaporative cooling unit water connection installed between roof covering and flashing and condensate drains do not discharge over a down pipe. • Issues with separations between water and other services.	
Sanitary Drainage Systems	**202**	• Minimum required separation between Overflow Relief Gully (ORG) and the lowest fixture not met. • No inspection opening cover and ORG grate not removable. • Inspection shaft covers not installed and not independently supported. • No concrete support under drainage bends and sewer drainage with incorrect fall.	

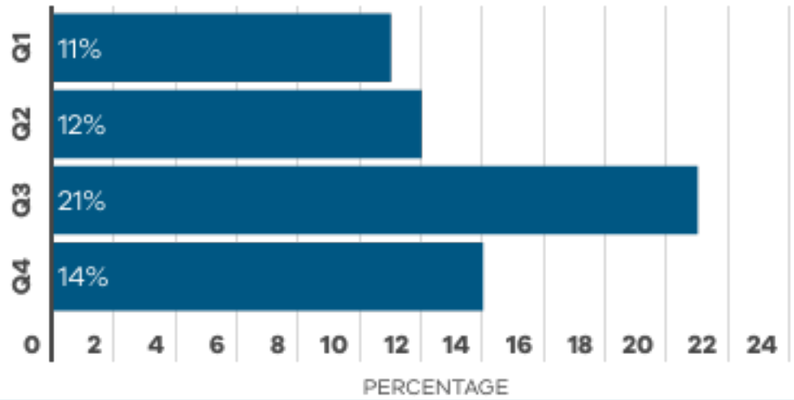
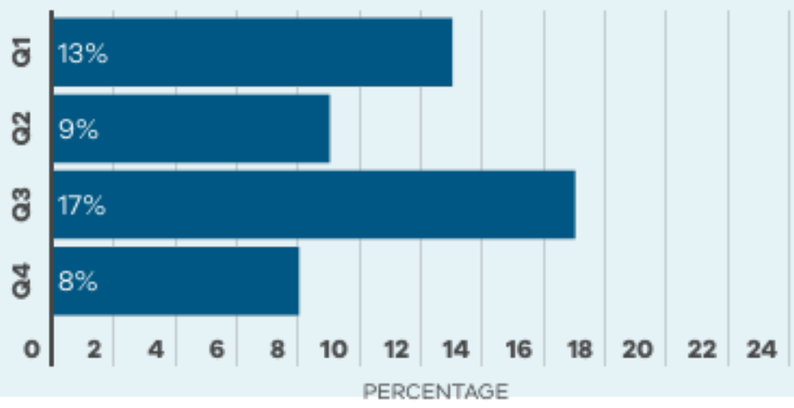
Plumbing catergory	No. of non-compliant items in category	Common non-compliance in each category	Prevelance per quarter
Heated Water Services	**158**	• Several issues with solar hot water pipes: Solar hot water pipes passing under tiles non-compliantly and penetrating the roof through a non-compliant flashings (collar flashings not used for water supply roof penetrations) and insufficient clearance from other services (gas and electrical). • Solar flow and return lines not insulated and/or supported appropriately (not clipped at appropriate intervals). • Solar flow and return lines installed under roof tiles and not penetrating the roof coverings appropriately.	

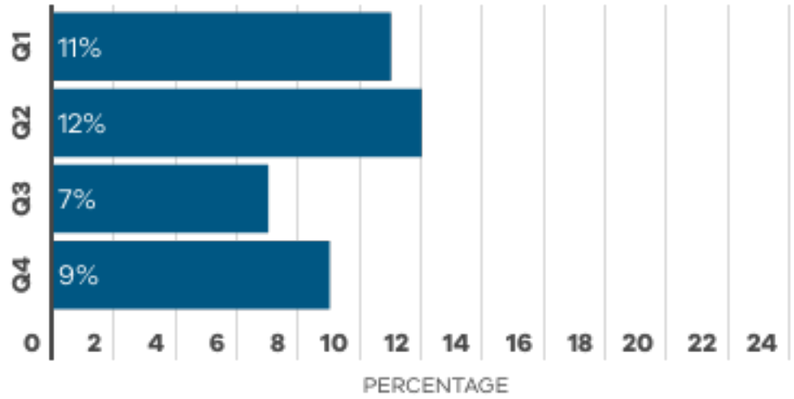
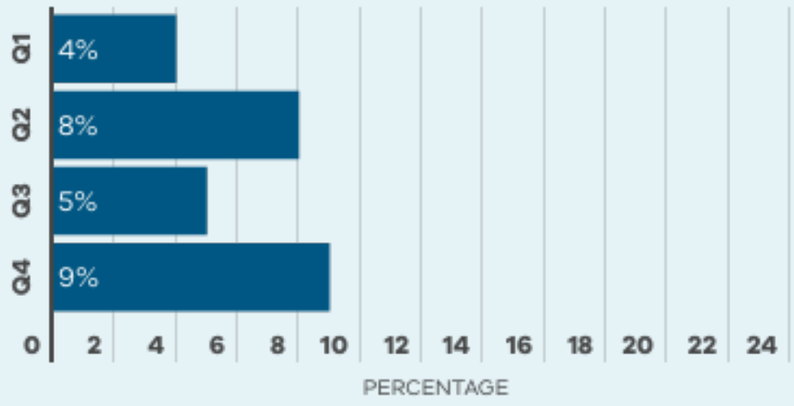
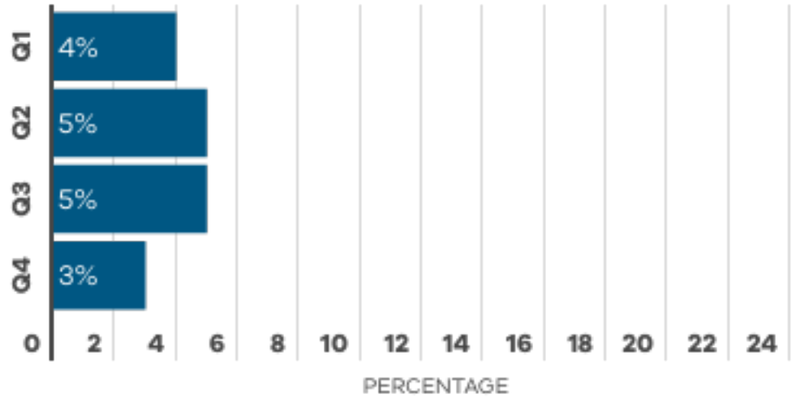
4.3. OVERVIEW OF COMMON NON-COMPLIANT ITEMS OBSERVED

COMMERCIAL

Approximately 2,000 elements were inspected across **413 sites and 222 elements (across 109 sites) were identified as a compliance risk** requiring rectification or justification. Five critical issues (across three sites) were found that were mostly OHS issues.

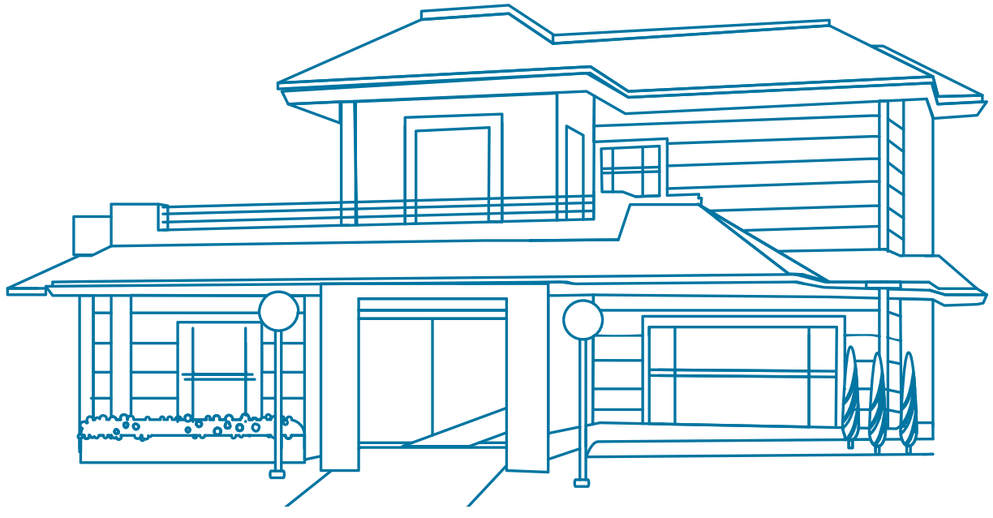
The most common non-compliances observed within the TOP FIVE CATEGORIES

Building Catergory	No. of non-compliant items in category	Common non-compliance in each category	Prevelance per Quarter
Roof Drainage Systems	**45**	• Sumps undersize and/or discharge through non-compliant side chutes. • Insufficient width of box gutter for commercial (200mm) Several 'box gutter' issues, incorrectly terminated, reduced in size and / or insufficient overflow provision. • Roofing - Valley gutter installed on a 4-degree pitched roof, upper roof discharging uncontrolled onto the lower roof, valley catchment exceeding 20sq meters of roof.	
Sanitary Plumbing Systems	**33**	• Sanitary and drainage vents not supported appropriately and drainage vents with insufficient gradient. • 88–degree junctions installed on a graded sewer. • Expansion joints not clipped and not installed on above ground sanitary drains. • Junction fittings installed in exclusion zones at several sites.	

Building Catergory	No. of non-compliant items in category	Common non-compliance in each category	Prevelance per Quarter
Cold Water	**30**	• Backflow prevention required on flexible shower hoses that reach the floor and toilet. • Insufficient separation from electrical and gas services and recycled water, fire and water services clipped together. • No pressure limiting devices installed into meter assembly. • Water service not protected through slab.	
Sanitary Drainage Systems	**23**	• Minimum required separation between Overflow Relief Gully (ORG) and the lowest fixture not met. • No concrete support under drainage bends and sewer drainage with incorrect fall.	
Sub-surface Drainage	**14**	• Below ground storm water drains minimum coverage not met in large developments. • Proximity issues between storm water drains not achieving clearance between services. • No inspection openings on stormwater drainage, stormwater pits pipe insertion not sealed. • Stormwater pit exceeding 2.5 meters without ladder access.	

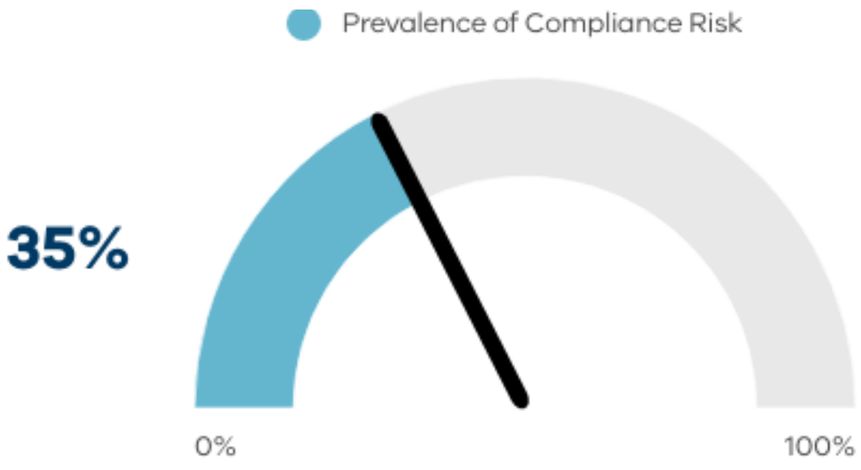
4.4. COMPLIANCE RISK PREVALENCE - SINGLE VS DUAL OCCUPANCY DWELLINGS

SINGLE OCCUPANCY

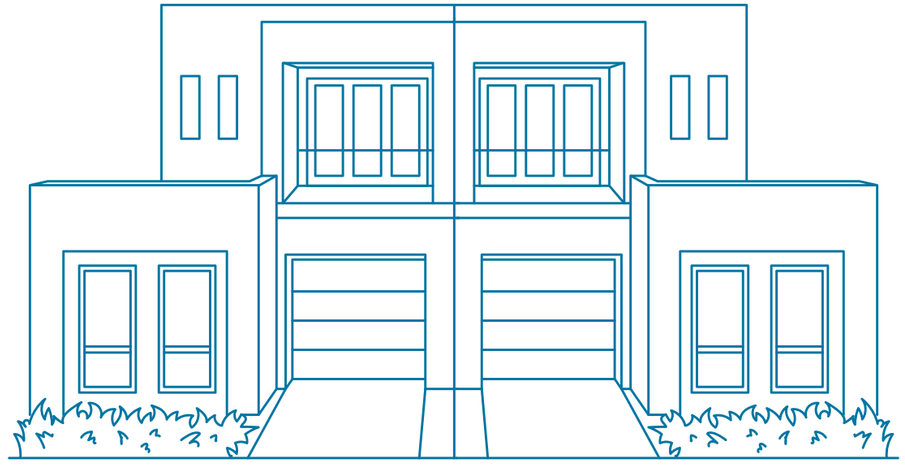


Common Plumbing Issues

- Roof Drainage Systems
- General Gas Installation
- Sanitary Plumbing Systems
- Cold Water Services
- Sanitary Drainage Systems
- Heating, Ventilation, and Air-Conditioning Systems

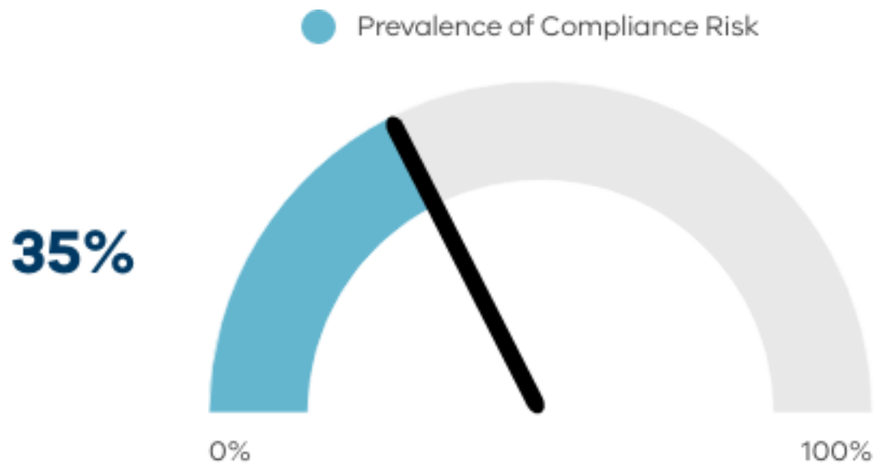


DUAL OCCUPANCY



Common Plumbing Issues

- Roof Drainage Systems
- General Gas Installation
- Sanitary Plumbing Systems
- Cold Water Services
- Sanitary Drainage Systems
- Heated Water Systems



4.5. PREVALENCE OF PLUMBING COMPLIANCE RISKS BY CLASS

Class	No. of sites inspected	% of compliance risks across class from all inspections	Areas of serious compliance risk for building
Domestic (Class 1 and 10)	**4,321**	**35%**	• Roof Drainage Systems • General Gas Installation • Sanitary Plumbing Systems • Cold Water Services • Sanitary Drainage Systems
Apartments ≥2 sole occupancy (Class 2 + mixed use) and group dwellings and hospitals (Classes 3, 4, 9a&c)	**117**	**34%**	• Sanitary Plumbing Systems • Cold Water Services • Roof Drainage Systems • General Gas Installations • Surface and Subsurface Drainage Systems
Assembly building with no dwellings (Class 9b)	**103**	**18%**	• Roof Drainage Systems • Sanitary Plumbing Systems • Sanitary Drainage Systems
Office buildings and cafes, shops and markets with no dwellings (Classes 5, 6 + mixed use)	**53**	**25%**	• Roof Drainage Systems • Sanitary Plumbing Systems • Sanitary Drainage Systems
Warehouse and factories and carparks – no dwellings (Classes 7a, 7b, 8)	**140**	**27%**	• Roof Drainage Systems • Cold Water Services • Sanitary Plumbing Systems • Sanitary Drainage Systems

4.6. CASE STUDIES

4.6.1. WHAT IS BEING DONE WELL IN CLASS 1A BUILDINGS

Overview

VBA expanded its Proactive Inspections Program's regional reach in 2022, visiting Bendigo, Traralgon and Bairnsdale. The VBA was pleased to observe plumbing work that was consistently of a high standard:

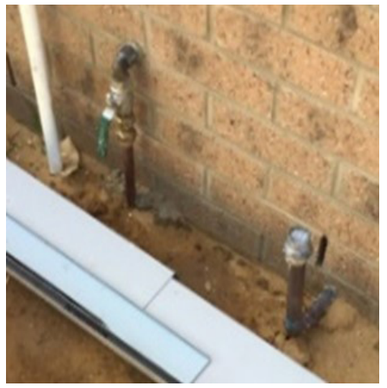
- Compliant materials used at termination/entrance points of dwellings for gas and water.
- Installation of roof cladding - was square, straight and built to prevent prevailing wind effects and used compliant fixings of cladding and flashings.
- Roof cladding and gutters were left clean (without debris) on completion.
- Penetrations in roof cladding were straight, square and sealed using appropriately sized flashings, compliant fixing of flashings and with minimal overuse sealants.
- Tidy work sites at various stages of construction.

VBA's Response

While the focus of the Proactive Inspections Program is to identify non-compliant plumbing work under construction and ensure it is rectified, the VBA also uses the opportunity, where it is warranted, to praise practitioners for their diligence in delivering high standards of work to a compliant standard.

Compliant termination/entrance points for gas and water





Roof cladding, gutters and penetrations



Tidy work sites at various stages of construction



4.6.1. WHAT ISN'T BEING DONE WELL IN CLASS 1A BUILDINGS

Overview

The VBA's observation of what isn't being done well includes:

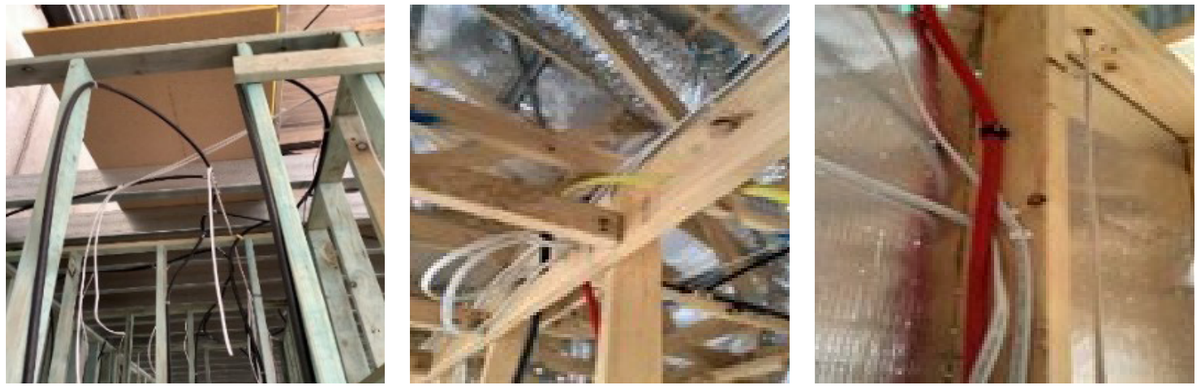
- Insufficient separation of services, multi layer gas piping installations exposed to UV lights and missing reversion fittings, are consistently observed during proactive inspections of Class 1a buildings.
- Insufficient separation of services is often caused by other trades such as electricians. The VBA urges building practitioners to ensure the responsible trades are aware of the requirements to achieve separation.
- UV exposure to multi layer piping is not taken as a serious threat to the material by practitioners who are not taking precautions to cover piping during construction. Proposed changes to Standard AS/NZS 5601.1 will prohibit multi-layer piping from being installed externally in all cases.
- A common response from practitioners about using reversion fittings is that its purpose is not well understood leading to its omission in plumbing work. Practitioner education is required to better educate practitioners on what the intention of the provision of a reversion fitting is for.

VBA's Response

The VBA sends a notification to the builder about these issues, directing the builder to provide the details of the responsible plumber and to ensure the plumber rectifies the non-compliant plumbing work.

The VBA will also consider future awareness and education opportunities for relevant practitioners to improve compliance outcomes.

Insufficient separation of services from electrical wiring installations



Multi layer gas piping (yellow pipework) exposed to UV unprotected.

Omission of reversion fittings on multi layer gas piping installations

Victorian Building Authority

Online
www.vba.vic.gov.au

Email
customerservice@vba.vic.gov.au

Postal Address
PO Box 536
Melbourne VIC 3001

Telephone
1300 815 127

Opening Hours
Monday to Friday, 8:30am to 5:00pm

Registered Office
Goods Shed North
733 Bourke Street
Docklands VIC 3008

APPENDICES

APPENDIX 1: PROACTIVE INSPECTIONS PROGRAM - RISK RATING SCALE

The following table shows the PIP risk rating matrix.

The level of risk observed during inspection determines the VBA's response and any actions required of the relevant building practitioners.

LOW RISK (PASS)	Non-compliance is not identified at inspection, or any non-compliance is consistent with work in progress and is reasonably expected to be resolved as work progresses.
LOW RISK (LOW-IMPACT)	It is unlikely that the compliance risk, if left untreated, would cause an adverse effect on the safety and/or amenity of the occupants. Financial loss for future occupants or loss of structural integrity is unlikely.
MEDIUM RISK	It is possible that the compliance risk, if left untreated, would cause an adverse effect on safety and/or amenity of the occupants/public. Financial loss for future occupants or loss of structural integrity is possible.
HIGH RISK	It is almost certain that the compliance risk, if left untreated,would cause an adverse effect on the safety and/or amenity of the occupants/public. Structural integrity would be significantly compromised and/or total loss of project value would be incurred.

APPENDIX 2: PROACTIVE INSPECTIONS PROGRAM - ELECTRONIC CHECKLIST

SECTION ONE

Guidance on mandatory requirements under the Building Act 1993 and Building Regulations 2018

Building Regulation 2018 Provision and display of permit information (Regulation 41)

Building Act 1993 Part 3 Building Permits (Section 16 - works without a Building Permit or not in accordance with Building Permit, Section 24A- appropriate certificate of insurance issued for cost of building work >$16,000 , Section 24B – Specification of builders in relation to specific building work, Section 25B – Restrictions on owner builders.

Building Act 1993 Part 5 Occupancy Permits

Building Regulation 2018 Part 5 Siting (Regulation 73 to 97 when applicable)

Building Regulation 2018 Part 7 Protection of adjoining property and public

Building Regulations 2018 Part 8 and Part 10 Building work and Designation of special areas of building work (Regulation 132, 150, 152, 153,154)

APPENDIX 2: PROACTIVE INSPECTIONS PROGRAM - ELECTRONIC CHECKLIST CONTINUED.

SECTION TWO

Guidance on building work relevant to residential inspections and is broken down into different building stages under the National Construction Code of Australia BCA Vol 2 (class 1 and 10)

Site preparation Earthworks and Site cuts, site surface drainage and termite risk management

Footings and Slabs Preparation Concrete and Reinforcing, site classification, and footings and Slab construction

Masonry Unreinforced and reinforced, accessories, weatherproofing and earth wall construction

Framing Sub-floor ventilation, Timber/Steel Framing, Structural Steel members

Roof and Wall Cladding Roof cladding, Gutters and Down-pipes, Wall Cladding

Glazing

Fire Safety Separation, Smoke Alarms, Heating appliances, bushfire areas, Alpine Area

Health and Amenity Wet Area and External water

Safe movement and Access Stair Construction, Balustrading and Handrails, Swimming pool Safety Barriers, Swimming pool Water recirculation

Additional Construction High Wind, Earthquake and Flood Hazard

Structural Design

Energy Efficiency Building fabric, external glazing, Building Sealing, Air Movement

SECTION THREE

Guidance on building work relevant to commercial inspections and is broken down into different building stages under the National Construction Code of Australia BCA Vol 1 (class 2 to 9)

Section B: Structure

Section C: Fire Resistance Fire Resistance and Stability, Compartment and Separation, Protection of Openings

Section D: Access and Egress Provision of Escape, Construction of Exits, Access for People with Disability

Section E: Services and Equipment Fire Fighting Equipment, Smoke Hazard Management, Lift Installations, Emergency Lighting, Exit Signs and Warning Systems.

Section F: Services and Equipment Damp and Weatherproofing, Sanitary and Other Facilities, Room Heights, Light and Ventilation, Sound Transmission and Insulation.

Section G: Ancillary Provisions Minor Structure and Components, Heating Appliances, Fireplaces, Chimneys and Flues, Atrium Construction, Construction in Alpine Areas and Bush-Fire Prone Areas

Section H: Special Use Buildings Theatres, Stages and Public Halls, Public Transport Buildings

Section J: Energy Efficient Energy Efficient, Building Fabric, Glazing, Building Sealing, Air-Condition and Ventilation Systems, Artificial Lighting and Power, Heated Water Supply and Swimming Pool and Spa Plant, Access for Maintenance and Facilities Monitoring.

APPENDIX 2: PROACTIVE INSPECTIONS PROGRAM - ELECTRONIC CHECKLIST CONTINUED.

SECTION FOUR

Guidance on requirements under the Plumbing Regulations 2018, NCC: Plumbing Code of Australia Volume 3 2019 Victorian section and relevant standards that apply to residential and commercial properties in the following categories.

Water Services (Section B of the NCC PCA Vol 3 2019 Vic and AS/NZS 3500:1:2018 and 3500:4:2018) - Cold Water Services, Heated Water Services, Non-Drinking Water Services, Firefighting Water Service

Sanitary plumbing and drainage systems (Section C of the NCC PCA Vol 3 2019 Vic and AS/NZS 3500:2:2018) - Sanitary Plumbing Systems and Sanitary Drainage Systems

Stormwater Drainage Systems (Section F of the NCC PCA Vol 3 2019 Vic and AS/NZS 3500:3:2018) - Roof Drainage Systems, Surface and Subsurface Drainage Systems

Heating, Ventilation and Air-conditioning (Section G of the NCC PCA Vol 3 2019 Vic)

On-Site Wastewater Systems (Section G of the NCC PCA Vol 3 2019 Vic and AS/NZS 3500:2:2018) - On-Site Wastewater Management Systems; On-Site Liquid Trade Waste Systems

Gas Installations as per AS/NZS 5601:1:201 General Gas Installation, Type A Servicing Work, Type A Conversion Work

Unlicensed plumber in the relevant field Unlicensed in: Drainage, Fire Protection, Gas fitting, Irrigation, mechanical, Roofing -Sanitary Water Supply

SECTION FIVE

Guidance on elements concerning immediate life-safety issues to ensure these items are inspected first.

OHS Practices at the site and hazards etc.

Scaffolding Makeshift working platforms, Guard Rails & Kick boards

Electrical Risk Exposed Live Electrical, Power leads & Power boards

Excavation Working in trenches over 1.5m Deep, site cut over 1.5m

Asbestos Debris or removal

Temporary Fencing Site entry is restricted or affecting public

Amenity and housekeeping at the site Rubbish control, materials storage and site toilets

Fall risks Working over 2m in height (Opening in platforms/stair voids, Secured access ladders

Structure Stability Adequate temporary propping & bracing

COVIDSafe Requirements A separate checklist is used during COVID restrictions and covers adherence to mandatory COVIDsafe requirements; physical-distancing, mask wearing, worker limits, QR codes and evidence of a COVIDSafe plans.

IF THESE ITEMS PRESENT AN UNACCEPTABLE RISK, THE RELEVANT CO-REGULATORS ARE CONTACTED IMMEDIATELY BY THE BUILDING INSPECTOR.

APPENDIX 3: HIGH RISK INSPECTIONS - COMPOSITION OF HIGH COMPLIANCE RISK ELEMENTS FY21/22